Mounting and Framing Pictures

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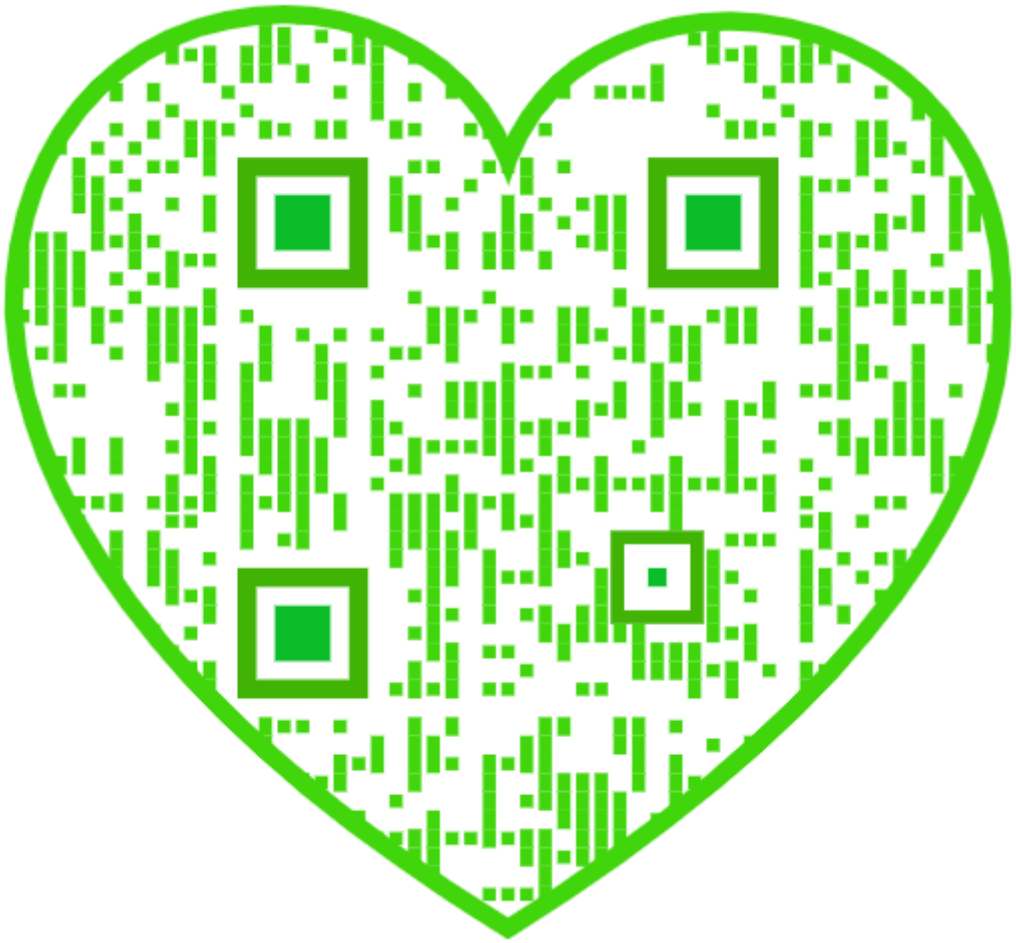

MOUNTING AND FRAMING PICTURES

WITH NUMEROUS ENGRAVINGS AND DIAGRAMS

EDITED BY

PAUL N. HASLUCK

EDITOR OF "WORK" AND "BUILDING WORLD"
AUTHOR OF "HANDYBOOKS FOR HANDICRAFTS," ETC. ETC.

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PREFACE.

THIS Handbook contains, in a form convenient for everyday use, a comprehensive digest of the information on Mounting and Framing Pictures, scattered over ten thousand columns of WORK—the weekly journal it is my fortune to edit—and supplies concise information on the general principles of the subjects on which it treats.

In preparing for publication in book form the mass of relevant matter contained in the volumes of WORK, much that was tautological in character had to be rejected. The remainder necessarily had to be arranged anew, altered, and largely re-written. From these causes the contributions of many are so blended that the writings of individuals cannot be distinguished for acknowledgment.

Readers who may desire additional information respecting special details of the matters dealt with in this Handbook, or instruction on kindred subjects, should address a question to WORK, so that it may be answered in the columns of that journal.

P. N. HASLUCK.

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MOUNTING AND FRAMING PICTURES.

CHAPTER I.

MAKING PICTURE FRAMES.

BRIEFLY the ideal frame may be held to be one which best suits the picture; but, keeping this end in view, it may be as beautiful in itself as skill or thought can make it, provided that it never forces itself into the first place, for it must be remembered that pictures are of infinitely more importance than their frames. The binding of a book is of small consequence compared with its contents, yet a tasteful and decorative cover is always desirable. Perfection demands care for the trifles as much as for the important features; and a regard for beautiful frames by no means implies a neglect of appreciation of their contents. Those persons who recognise the more subtle beauties of form and colour, insist on the frame fulfilling its true purpose.

For making frames from manufactured moulding, the tools required are few, but they should be of good quality. If frame making is to be taken up as a trade, use an iron plane; failing this, have a good wooden one. It is of the utmost importance that the plane should be kept in good order, nicely ground and sharpened square across. A 14-in. tenon-saw to cut up the moulding will be required; this must be kept in good cutting order, as, the better it works, the less will the plane be required. A good-sized bench vice, such as mechanics use in a fitter's shop, will also be necessary. A few sprig-bits of various sizes, a paring chisel, hammer, rule, glue-pot, and pair of pliers, are some more tools it will be necessary to have handy for use.

The mitre-board is used to facilitate the cutting of the moulding to mitre at the corners, and can be made of a piece of deal 2 in. by 2½ in. and 2 ft. long, nailed down on to a piece of 1-in. deal, 6 in. wide, and the same length. Now make on the top side of the deal two marks bevelling exactly to a mitre, and cut down with the saw intended to be used in cutting up the moulding, thus forming the mitre-cut kerfs shown in Fig. 1. Care must be taken in putting the pieces of wood together that there are no nails where the saw cuts are wanted.

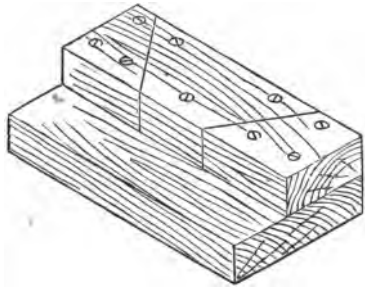


Fig. 1.—Mitre Block

There are few amateurs who have sufficient frame making to repay the cost of a really good mitre-cutting machine, and the old way of cutting up with the block and rule and pencil often leads to mistakes being made in the size. The mitre-cutting block illustrated by Figs. 2 and 3 meets the requirements of speed and safety, while it costs but little, and can be made by the worker himself.

Plane up a piece of clear, dry deal, A (Figs. 2 and 3), 3 in. by 2 in., and 5 ft. long. Plant it on another piece of deal the same length, B, 1 in. thick and 5½ in. broad, and nail or screw together through the thin piece into the thick one, keeping them level on the back edge; the wood is now in the form of the mitre cut, Fig. 1,

only much longer. Now carefully set out with square and bevel for the two saw cuts to form the mitre at the left-hand end, as illustrated, allowing 9 in. clear between the two cuts. Screws, not nails, should be used in fastening together at this end. When marked for cutting, examine it carefully where the marks are, and if any screws are in the way of the saw cuts, withdraw them; and previous to cutting put in plenty of screws to keep the pieces firm when cut. Use a sharp, nicely set saw to make the saw cuts, which must be upright and true. Now get four plates of iron or brass, 1½ in. broad, and long enough to reach across the strip A when held parallel with the saw cuts; mark these to the bevel and cut them off a little shorter than the width of A; drill two holes in each, keeping the holes on the edge away from the cut, and screw them down in position (see C), one on each side of the saw cut. If this is done nicely, the plates will effectively keep the cut from wearing and becoming untrue.

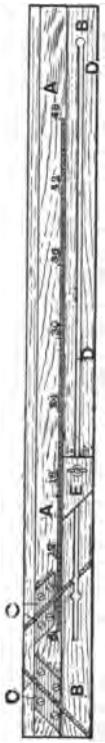


Fig. 2.—Plan of Mitre Block.

Now with rule, square, and gauge, mark a measure along the block to the right hand, taking the measure from the saw cut nearest the left-hand end. As few picture frames are made less than 6 in. or 8 in. long, the measure need not be marked shorter than 6 in. away from the first cut; run gauge marks along the top edge of the block in exactly the same manner as a joiner's rule is marked, and then, fastening down a rule, cut in with a square

Fig. 3.— End View of Mitre Block.

and marking knife the eighths, quarters, half-inches, and inches right away to the end of the block. Then cut in the figures with a small chisel and gouge; glass-paper the block smooth, and give it a few coats of French polish; when dry, rub along the cuts a little black swarf off the oilstone—this will sink into the cuts and figures and make them more legible. Wipe the black off the level surface, and apply more polish till a good surface is obtained. This measure will determine at a glance the length to which a moulding is to be cut. The bottom piece of the base must have a slot D cut in it, running along it within 6 in. of each end. This is cut right through, and is ⅜ in. wide; the best way to cut it out is to run gauge marks up the centre, then bore a ½-in. hole through at each end, and saw the piece right out. This groove or slot is rebated on the bottom side to admit the head of an iron bolt which works in it. This rebate can easily be cut by running a plough groove on the underside with a ¾-in. iron, and cutting down ¼ in. in depth. This is best done before cutting the slot through.

A block E is now required of the thickness of the back or rule piece and of the width of the rebate formed on the block; this must be cut to a mitre at one end and fitted to slide along the base level with the rule piece. A ⅜-in. iron bolt must go right through it and through the groove, the head of the bolt sliding in the rebate, and the top of the bolt coming through the sliding block and finishing with a wing-nut and washer, which can be easily tightened with the thumb and finger. This must be so fitted that it will allow the block, whilst close to and level with the rule, to slide easily the whole length of the base. A couple of pieces of rough glasspaper, glued on the underside of the base at each end, will prevent the mitre block moving about when in use.

To use the mitre, it is placed on the bench, and a length of moulding is placed on it and cut to a mitre at the right-hand end; the sliding block is moved to the size required, its place being seen at a glance. The

thumbscrew is tightened and the moulding moved up to the block and cut off to a mitre at the other end; the piece of moulding is again cut in the other saw kerf and placed in position, as many lengths as are required being cut off before the sliding block is moved. It will readily be seen that this is a great saving in time as compared with the old way; it is also evident that each piece of moulding must be exactly the same length, and that mistakes cannot occur by missing the pencil marks. The illustrations will make everything clear. Fig. 2 is a plan of the mitre block complete, and

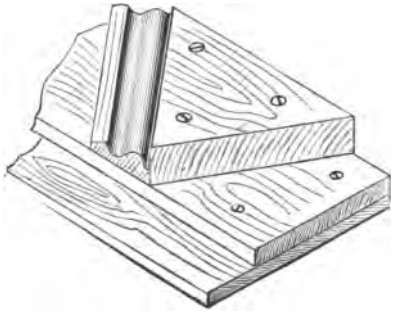


Fig. 4.—Shooting Block.

Fig. 3 is an end view, the same parts being similarly lettered in both figures.

The quality of the mitre depends, to a great extent, on the mitre-shoot or shooting-block (Fig. 4). It is preferably made of oak or other hard wood, and has a base 2 ft. 4 in. long and 9 in. wide, planed true on both sides, with a groove ploughed down 3 in. from one edge to a depth of ⅝ in. The top piece is ⅝ in. thick, 6 in. wide, and 2 ft. 4 in. long. This is trenched, about ¼ in. deep (exactly on the mitre), to receive a triangular piece of oak 1½ in. thick screwed from the underside firmly, and placed on the base planed level with the edges of the wood, the edge just covering the edge of the ploughed

groove. The place where the plane runs along on the mitre-shoot should be oiled with linseed oil and polished;

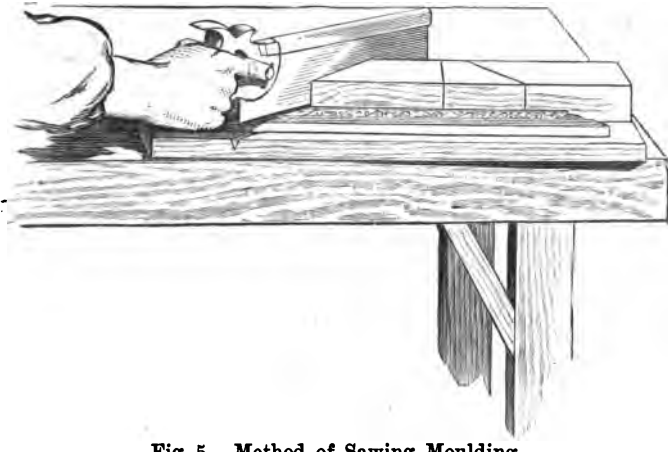


Fig. 5.—Method of Sawing Moulding.

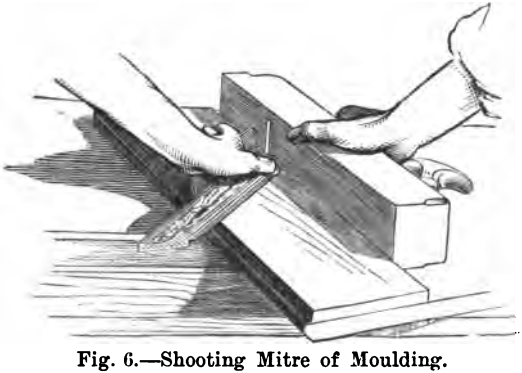


Fig. 6.—Shooting Mitre of Moulding.

this will greatly facilitate the working of the plane. The plane, whether iron or wood, should be preferably a trying plane, not shorter than 22 in., with a cutting iron $2\frac{3}{8}$ in. or $2\frac{1}{2}$ in. wide.

In making and putting together a frame, first the required length is sawn off the moulding to a mitre, as shown in Fig. 5. Any knots or flaws in the moulding must be away from the mitres, a knot or shake at the corners being very awkward. See also that the moulding is straight in the length, and always use the straightest parts of the moulding for the longest pieces.

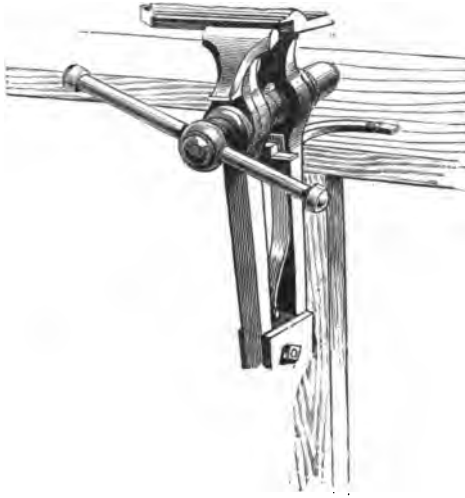


Fig. 7.—Moulding Gripped in Vice.

After cutting off the lengths required, and numbering them to prevent mistakes, shoot the ends on the mitre-shoot, Fig. 6. Holding the moulding firmly in its place with the left hand, and the plane in the right hand, shoot the mitre clean and true, reversing the moulding to do the other end, still keeping it square against the mitre-shoot. If this is not attended to, the frame will not be true, or "twist" when fastened together. The sides must be brought exactly to a length in pairs between the mitres.

Then commence to fasten the mitres together Place a piece of moulding in the vice, protecting its back edge with a piece of cardboard, and allowing the moulding to be gripped across from the back edge to the rebate (see Fig. 7). Screw up the vice as tightly as possible without injuring the moulding; then taking the other side or end, as the case may be, place it in position exactly as it should be when finished. Slide it

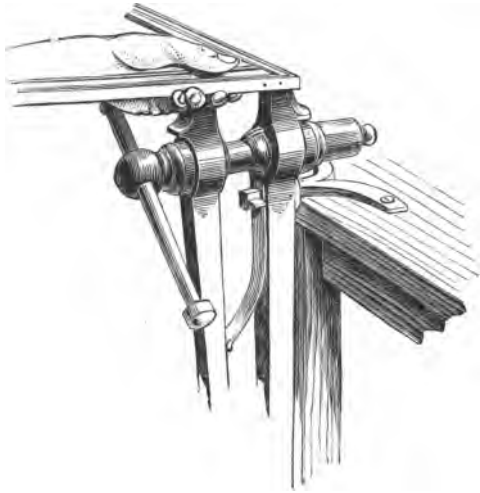


Fig. 8.—Moulding bored with Sprig-bit.

along the mitre towards the back edge about ⅛ in., and carefully bore with a sprig-bit through the first piece and a little way into the other one (see Fig. 8). Now take the moulding apart and give the mitre a smearing of clear, hot, thin glue; place the pieces in position and drive in the brads carefully, allowing the driving in of the nails to bring the moulding together till it intersects at all points. Fig. 9 shows how to hold the moulding when driving in the nails. Two halves of the frame are made in this way and then placed together; the

joints should then match properly without any more planing. The frame should now be nailed together, using exactly the same method as before. All the brads should be punched just below the surface of the moulding, and filled in with putty coloured to match the moulding. It will be found that in actual practice

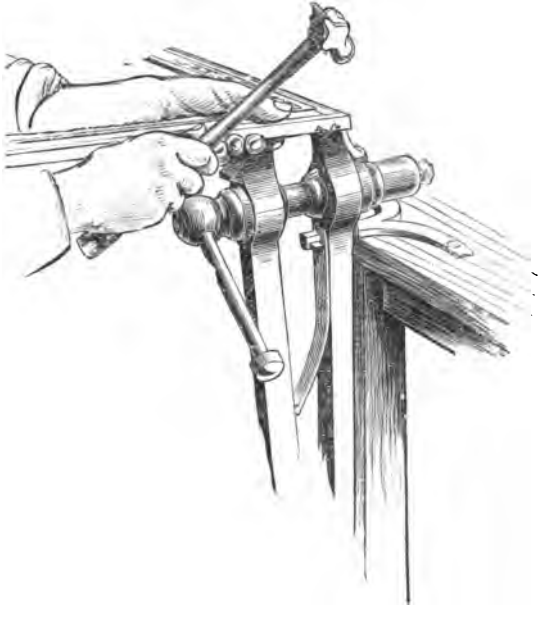


Fig. 9.—Method of Nailing Moulding Mitres.

narrow moulding is much easier to put together than wide, therefore, those commencing to make frames should use narrow stuff.

A common method of putting together frames is simply to glue the mouldings and then cramp them in one of the appliances described in Chapter III. In a day or so, when the glue is hard they may be removed

from the cramps, and strengthened by the insertion of nails or brads, or saw kerfs can be made in the corners as at A (Fig. 10), and pieces of veneer, B, can be glued in. Fig. 11 shows another effective way of securing the corners after they have been glued and cramped.

The frame being now complete, it may be fitted up and the picture inserted. Frames for oil paintings require no glass or back-boards, and the oil painting (when on a stretching frame) is simply sprigged in the rebate of the frame, care being taken that the sprigs are put in so that they do not come through to the front of the frame and chip off the composition.

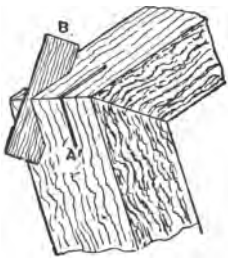


Fig. 10.—Fastening Mitred Corner with Veneer.

Fig. 11.—Method of Screwing Mitres.

The novice at cutting glass should practise on waste pieces, and note carefully the position in which the diamond cuts best (never going over the same cut twice). In cutting glass for frames, always keep the glass a trifle smaller than the rebate size of the frame.

Picture-back boards are cut in various thicknesses to suit the size and strength of the frames. Thin back-boards can easily be cut to the required size with a chisel, using a rule as a guide for the chisel, and using the chisel the same way as a diamond; the board will then break clean through the chisel cut. Stouter boards must be cut with a fine saw. The back-boards are fastened in the frames with picture-back

sprigs—these are brads without heads; they are generally pushed in with a pair of pliers (not hammered in), care being taken not to make them bind too tightly on the back, or the glass may break.

Place the picture to be framed under the glass, which should have been thoroughly cleaned. Mark off any surplus mount with pencil, and then cut it away. Place the glass in the frame, then the picture face to the glass, and then the back-board. Put in sufficient sprigs to hold in the back, and then examine the picture to see that there is no dust, etc., between the picture and the glass. If satisfactory, put in sufficient sprigs to keep it flat in position. As a preventative of dust, smoke, and to some extent of damp, after the glass is in the rebate, strips of paper about ½ in. wide should be glued in round the rebate. The backs of the frames are covered with strong brown paper. To affix this, damp it with a sponge and water, and glue round the edge of the frame, place it on the paper, and rub well down on the edge; trim off the surplus paper with a sharp chisel or knife, and it will dry as tight as a drum. All that remains to be done now is to screw in rings, taking care, in the case of thin frames, not to screw them right through.

CHAPTER II.

NOTES ON ART FRAMES.

THERE are many frames whose simple ornamentation is truly artistic, and well within the amateur's scope. A few notes on some of these may not be out of place.

A frame made of deal 6 in. wide, covered with common sacking left plain, or dyed a dull green or peacock-blue, has found many admirers. The pictures in

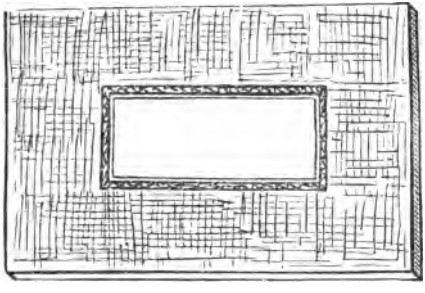


Fig. 12.—Frame made of Common Sacking.

such are surrounded by a gilt moulding about ½ in. to 1 in. wide. If the whole moulding and sacking—which may be, for large pictures, a foot wide—is gilded in one shade of gold, the result is really effective (see Fig. 12).

A frame of plain, flat oak, gilded to show the grain of the wood, with a row of brass-headed nails about a fifth of its width from its edge, or having a moulding inserted to simulate nail heads, looks very well (see Fig. 13).

The frame in Fig. 14 is most effective for figure

subjects, and is very simply made. The twin pilasters are merely ordinary turned work, cut in halves, and the mouldings and fillets are also simple. The frame may be finished in pure white enamel, or, if of oak, may be

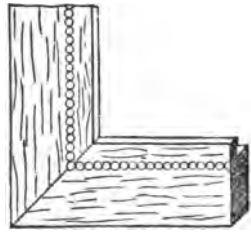


Fig. 13.—Corner of Flat Wood Frame.

coated with bronze powder, or, if in deal, with the usual plaster and gold-leaf finish. Of course, the frame may

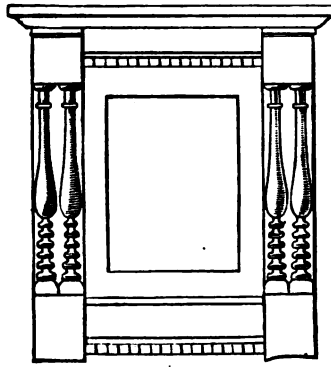


Fig. 14.—Frame with Turned Pilasters.

be enriched by lincrusta frieze or other similar decoration. In this and other frames to be described, when a flat surface with low relief ornament is needed, lincrusta is admirable, being inexpensive, easily worked, and a capital surface for after decoration.

Fig. 15 represents a white moulded frame, with an inner frame also white, the space between the two being filled with monochrome paper of quiet design,

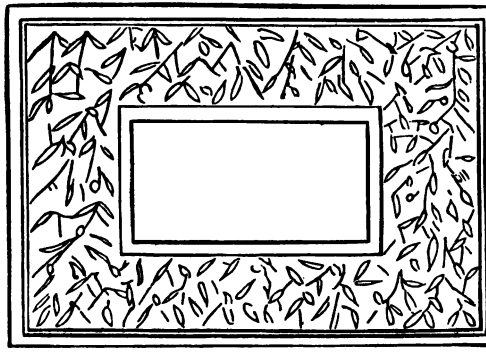


Fig. 15.—Overmantel Double Frame.

such as is seen on the fly leaves of books. Richer mouldings and lincrusta, or Japanese leather paper sub-

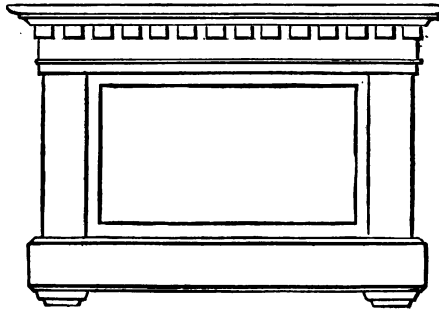
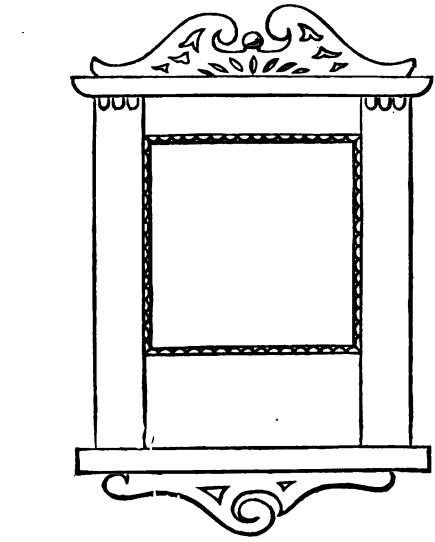
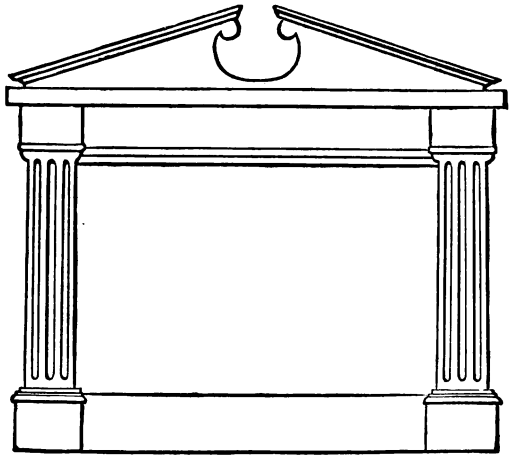


Fig. 16.—Memorial Tablet Frame.

stituted for the white and monochrome paper, make a useful frame particularly adapted to receive drawings in water colour.





Figs. 17 and 18.—Memorial Tablet Frames.

Frames after the fashion of the memorial tablets in churches of the Wren period, are shown by Figs. 16, 17, and 18. These, either finished in white, worked in dark rich polished woods, or solidly gilt, have a pleasing appearance.

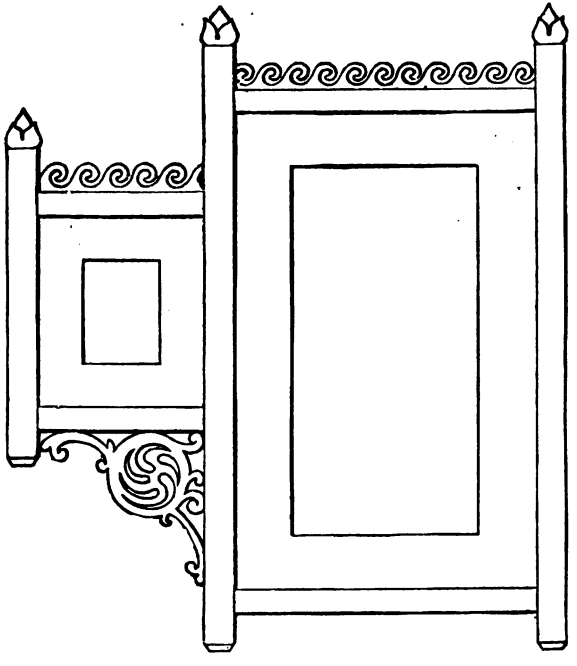


Fig. 19.—Triple Frame ornamented by Fretwork.

A suggestion for a triple frame in simple joinery and fretwork is given in Fig. 19. If worked in black and gold, or all black, it would balance the overmantel in a small room, or harmonise with the now popular art furniture.

The frame (Fig. 20) is a pleasant bit of wall decoration,

yet in no way detrimental to the picture it encases. It may be entirely gilded, but it would look better with

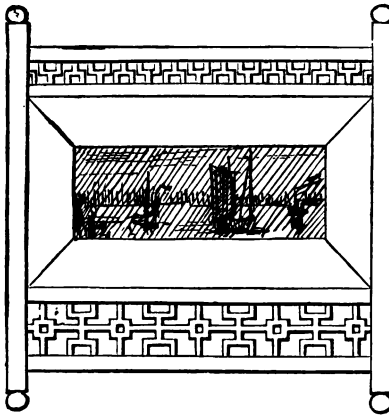


Fig. 20.—Gilt Frame with Fretwork Strips.

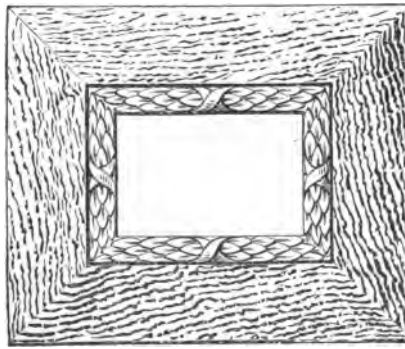


Fig. 21.—Rough Saw-cut Frame.

the oak fretwork strips and the flat oak mount gilded, and the framework finished in black.

Fig. 21 shows a frame which is made of wood rough

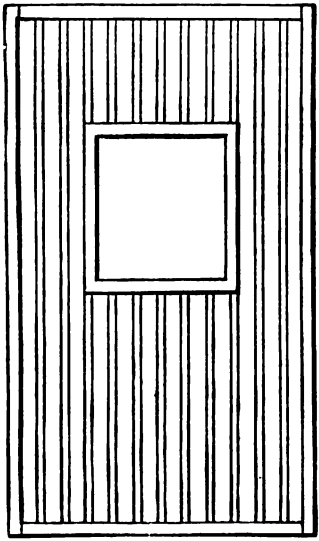


Fig. 22.—Frame with Grooved Wood Panel.

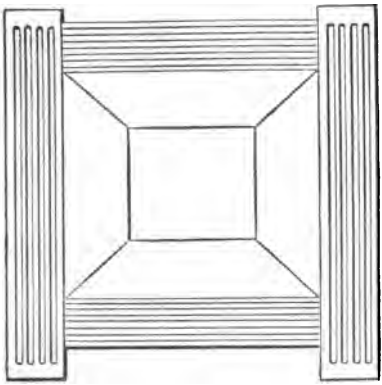


Fig. 23.—Butt-jointed Frame of Reeded Wood.

as it leaves the saw, gilded with gold leaf, and adorned with a rich moulding around the opening for the picture.

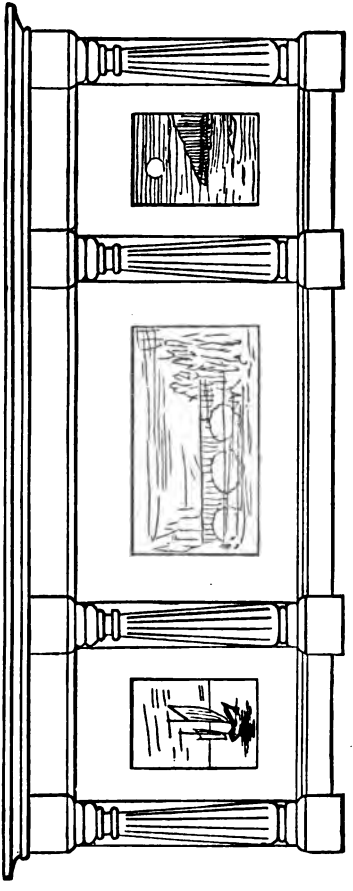


Fig. 24.—Frame ornamented by Half-balusters.

The surface of the wood bevels outwards—that is the inside edge is thicker than the outside.

Fig. 22 is a rough sketch of a frame that may suit

some tastes. It encloses a panel grooved into the frame, like a drawer bottom, for instance. The opening for the picture is bordered by a beading of plain square wood, the glass being either rabbeted into this or fixed with tiny wood beads. The sides of the frame are narrow, the top somewhat wider, but not so deep at the bottom.

Fig. 25.—Frame enclosing Japanese Panel.

The panel may be simply of plain wood, ploughed with square parallel grooves running vertically, or it may be covered with silk or brocade. The whole of the framing is gilded with a uniform shade of gold, and the effect is exceedingly good. The grooves might with advantage be nearer together than in the sketch.

In Fig. 23 a suggestion for using reeded wood without mitres is given. Its effect is simple and pleasing.

In Fig. 24 a simple frame with mouldings is shown, parts of two ordinary turned balusters adding much to the effect. The turned work is sawn in half,

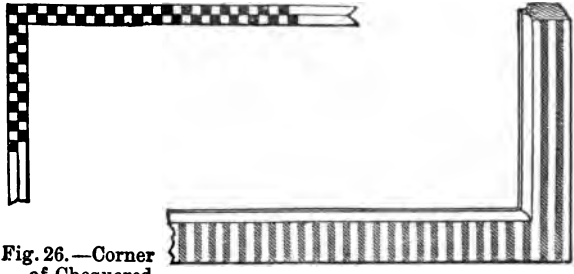


Fig. 26.—Corner of Chequered Frame.

Fig. 27.—Corner of Striped Frame.

and is applied pilaster fashion to the skeleton framework. In Fig. 25 is shown a frame with its panel covered with Japanese leather paper, the frame itself being gilded to the exact shade to match, or, if that is not possible, the whole may be bronze-powdered to be in harmony. These frames look extremely well in use, in spite of their rough crudeness. They also look

Fig. 28.—Section of Striped Frame.

well with a white moulding, and a low monochrome paper, or white brocaded silk in place of gold; photographs or etchings might be framed in this fashion, when a gold frame would probably overweigh a monochrome picture.

Fig. 26 shows a corner of a Japanese frame, which is just a white cardboard French mount for the etching,

Fig. 29.—Sixteenth-century Carved Frame.

and has no inner panel; the moulding is inlaid with veneer in black and white chequer pattern.

Fig. 30.—Section of Sixteenth-century Carved Frame.

In Fig. 27 is seen a portion of a frame which may be painted white, and be striped with lines hand-painted in

neutral tint, all going vertically as indicated; this also has a white cardboard mount. A section of the moulding is shown by Fig. 28. The mouldings of these last frames should be not more than $\frac{3}{4}$ in. wide.

Fig. 29 shows a frame executed in oak and carved in the Renaissance style, or what passed for such in the sixteenth century in England. Its exterior measurements are 2 ft. 6 in. wide, and 3 ft. high. A stout board about 1 in. thick forms its centre panel; it may be plain, and surrounded by a series of plain mouldings, worked from solid stuff 2 in. or $2\frac{1}{2}$ in. in thickness, mitred at the corner. The exterior ornamental work is carved from 1-in. or $1\frac{1}{4}$-in. material, formed in four pieces—top, bottom and sides—fastened upon the exterior edge of the thicker surrounding mouldings of the tablet and slightly set back from the front plane of the most projecting moulding. This will be better understood by referring to the section shown in Fig 30, *a* being the external ornamental portion, *b* the thicker moulding surrounding the central panel *c*.

The carving is not perforated, but the background, as it were, of the ornament is sunk to about half the thickness of the stuff. The raised portion may, if desired, be gilded, whilst the background may be black, white, or a pale green, to suit individual taste.

CHAPTER III.

PICTURE FRAME CRAMPS.

In Chapter I. the use of cramps in putting together frames was briefly mentioned, but nothing was said to aid the worker in the choice of one. During the last few years scores of cramps have been put upon the market, and, therefore, in selecting from so many, the novice meets with much difficulty. It is intended to give in this chapter brief descriptions of a few cramps,

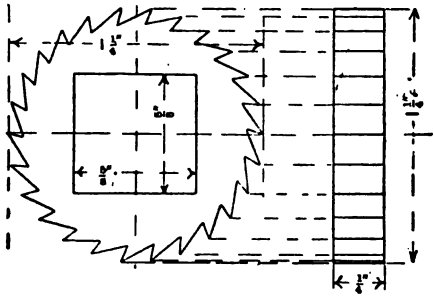


Fig. 33.—Ratchet Wheel of Cramp.

which are, with but one exception, home-made; their reliability has been proved by experience.

In the cramp shown by Fig. 31 (p. 33), a handle and ratchet arrangement enables sufficient tension to be put on the encircling string to draw the mitres together. The illustration shows the cramp in use; the thick black line surrounding the frame is the string or catgut. In making this cramp, a piece of ash or beech, 6½ in. by 2⅛ in. by 1¼ in., is cut with a slot 3¾ in. long by 1 in wide, as shown in Fig. 31. The handle should be turned as in Fig. 32 (p. 34), the part s being left square to fit

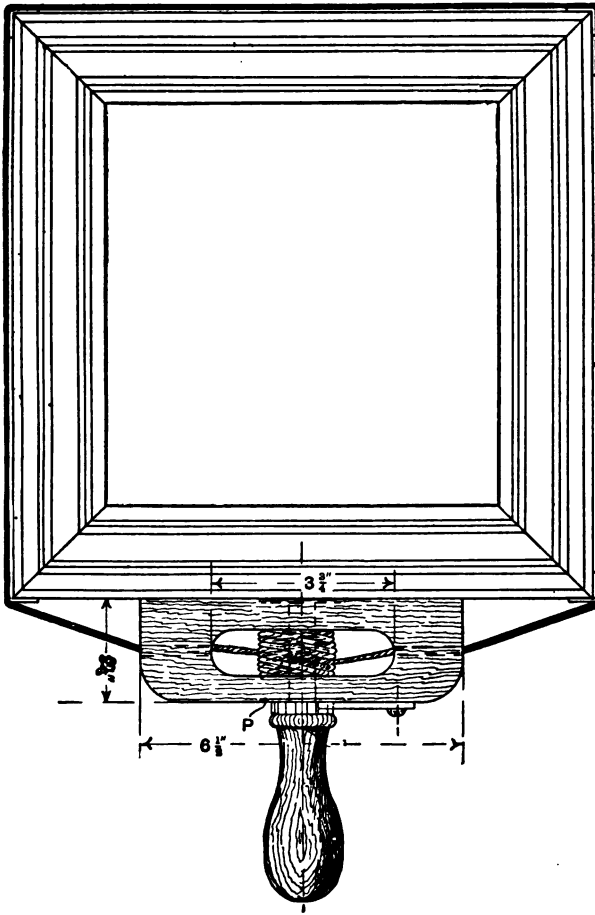


Fig. 31.—Ratchet Cramp.

the hole in the ratchet wheel, Fig. 33 (p. 32). The shank of the handle is $\frac{9}{16}$ in. in diameter, and turns freely in the hole in the block. A brass plate (Fig. 34), $\frac{1}{16}$ in.

thick, is let in the thickness of and screwed to the block; it acts as a washer-plate to take the wear of the retaining screw s (Fig. 35). A plate (Fig. 36) to take the wear of the ratchet wheel is fitted to the top of the block at P (Fig. 31).

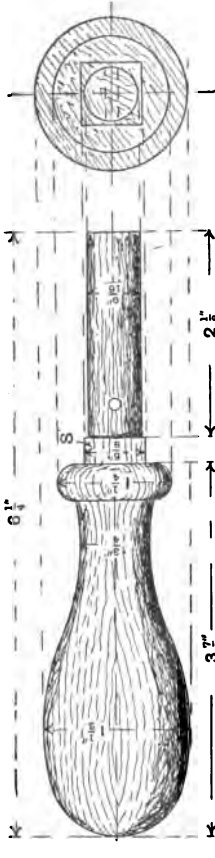


Fig. 32.—Handle and Shank of Ratchet Cramp.

The ratchet wheel (Fig. 33, p. 32), which is drawn full size, is of brass ¼ in. thick. The brass is held in a vice whilst each tooth is filed out. The square hole for the shank is made by first drilling a ⅝ in. hole and then filing the square corners. When this is finished, slip it on the square shank, place the handle in the block, and drive in the retaining screw s (Fig. 35), which should fit loosely in the plate and block, but tightly in the handle shank.

A pawl (Fig. 37) is of brass ⅛ in. thick and fixed with a button-head screw. This locks the ratchet wheel when in use. The string should be fairly thick and stranded tightly together, so that it does not stretch; a piece of stranded wire is preferable. Place the string on the shank, passing each end through the hole in the block, and knot it together, leaving sufficient to surround the picture frame. Four corner pieces of tin (see Fig. 38) prevent the string cutting into the moulding, a small piece of solder

(s, Fig. 38) being dropped on each corner and a shallow groove filed in it to keep the string in position.

When using the cramp, put the string in the centre

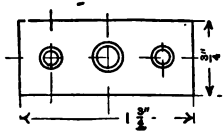


Fig. 34. — Retaining Plate of Cramp Screw.

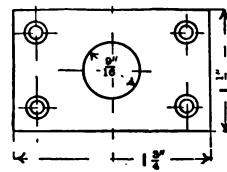


Fig. 36.—Ratchet - wheel Wearing Plate.

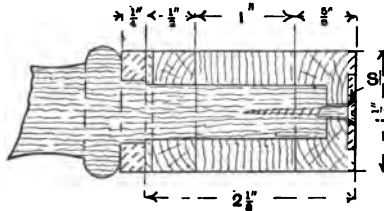


Fig. 35.—Detail of Shank.

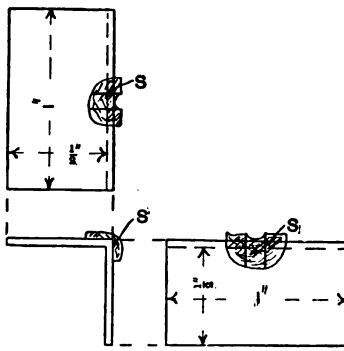


Fig. 38.—Corner Clips of Cramp.

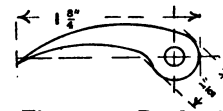


Fig. 37. — Pawl of Ratchet Cramp.

of the frame, so as to get an even pull. Turn the handle, and the string will commence to wind round the shank, consequently tightening round the frame and drawing

the mitres together. It can be left on the frame whilst the nails or screws are driven in; the corner clips, lapping only ½ in., do not interfere with this operation.

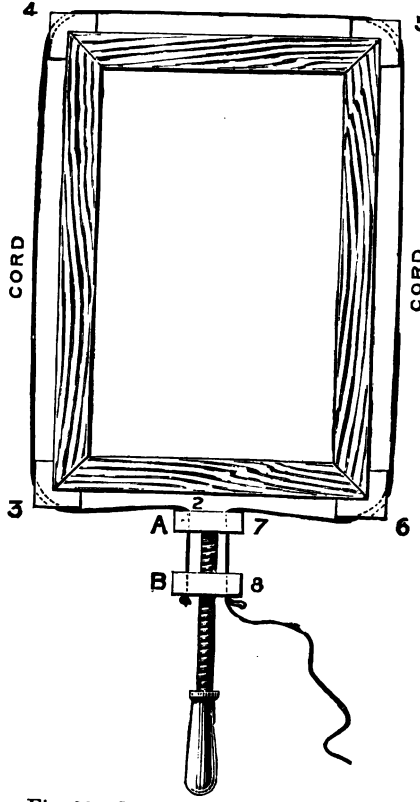


Fig. 39.—Hand-screw Mitre Cramp.

A little linseed oil rubbed over the woodwork occasionally will keep it in good condition.

With the cramp illustrated by Fig. 39 a string is also used. Get a piece of birch or any other hard wood about

1 in. square, mark off four pieces each ¾ in. thick; then make four holes slantways through the corner (as shown in Fig. 40), saw off the four pieces, and shape them, as in Fig. 41. Take a square piece out of

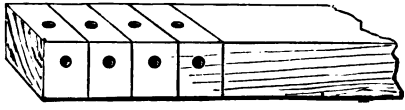


Fig. 40.—Block for Making Cramp Corner Pieces.

Fig. 41.—Corner Piece of Cramp.

the corner of each (A, Fig. 41), and shape the holes so that a cord will pass through easily (B, Fig. 41). A wooden screw, as illustrated, will be required. Fig. 39, A, is a piece of ½-in. birch 2 in. by 1½ in. In the centre

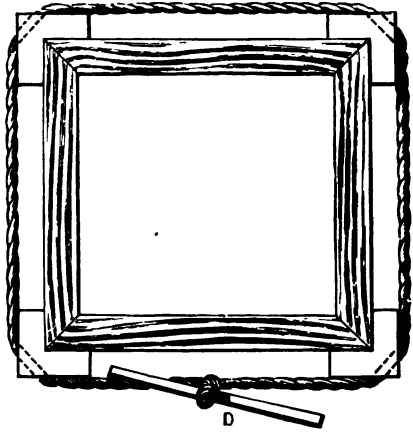


Fig. 42.—String Cramp.

is a hole half-way through, into which the point of the screw fits, and on either side there is a hole for the cord to pass through. B, Fig. 39, is a piece of the same size to form the nut of the screw, having two holes for the cord as in the other piece. Pass a strong cord (not

too thick), having a knot on one end, through the holes, beginning at B and finishing at 8. In using this cramp, lay the glued frame in position on a table; place one of the little blocks on each corner, and then draw the cord tight, and put a running knot at 8, Fig. 39. The cramp may then be screwed up.

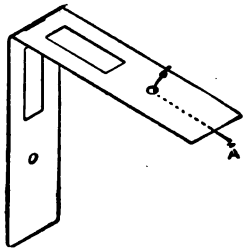


Fig. 43.—Iron Angle-piece of Cramp.

Taken in connection with the cramp just described, that shown at Fig. 42 may easily be understood. It differs from the last one merely in the fact that, instead of a screw being used to tighten the string, the work is performed by the piece of wood, D.

The advantage of using the iron angle-piece, Fig. 43, instead of a wooden one, is that the corners of the pic-

Fig. 44.—Section of Screw Cramp.

ture frame can be nailed when the cramp is on. To make it, four pieces of hoop-iron are required about 4½ in. long by ⅝ in. wide, similar to that shown in the illustration, which is an isometric view of one of the angle-pieces. These are bent to right angles, so as to fit the corners of the frame. Cut two slots in each ¾ in. long and ¼ in. from the angle, through which nails may be driven to secure the corners of the frame. Half an

inch from the end of each piece of hoop-iron drill a hole sufficiently large for a medium-sized piece of cord to pass through. The piece of cord A runs through the hole shown, a knot being tied outside, so that the cords run easily, and then through the hole in the angle-plate in the next corner; bend each end of the hoop-

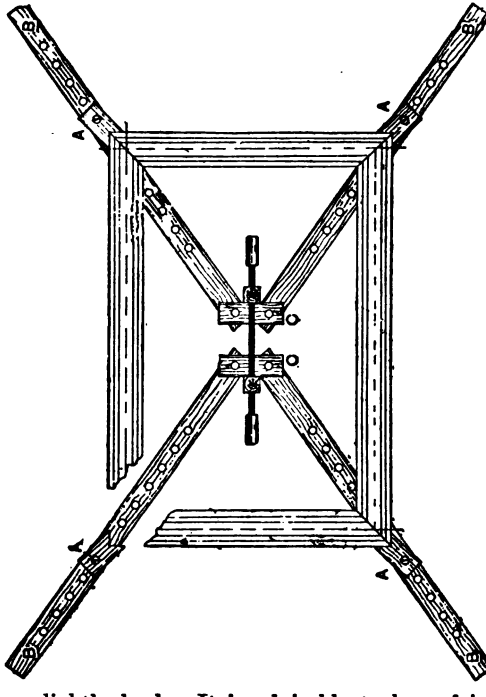
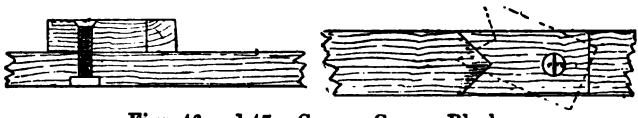


Fig. 45.—Plan of Screw Cramp.

iron slightly back. It is advisable to have fairly long lengths of cord, and to make knots at the required places. Twist one portion of the cord tightly by means of a short piece of wood, nail up the corners, and release the cramp. Cord may be made more pliable for the purpose by steeping it in boiling water.

Fig. 44 is the section and Fig. 45 the plan of a cramp

constructed on quite a different principle from those previously described. Figs. 46 and 47 show enlarged details of the angle block, A, Fig. 45, which is attached to the batten with ¼-in. stove screws 2 in. long, with the



Figs. 46 and 47.—Cramp Corner Block.

nut let into the under-side. Fig. 48 is the plan of one-half of the cramp, which can be opened to suit any size of frame.

To make the cramp, get four pieces of strong wood 3 ft. long, 2 in. wide, 1 in. thick. Mark them out for

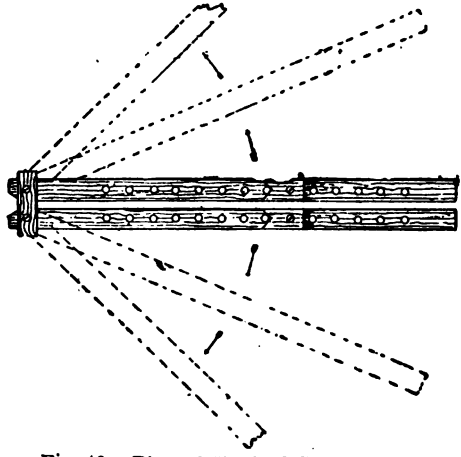


Fig. 48.—Plan of Half of Screw Cramp.

boring to receive screws thus: At one end mark off 2 in. as the centre of the hole to receive the cramping piece as at C (Fig. 45); then, commencing about 10 in. from the same end, mark off a series of holes, 2 in. apart, to receive the angle blocks marked A in Fig. 45. Next take two

pieces of the same wood, each 6 in. long, 2 in. wide, 1 in. thick, and bore holes 1½ in. from each end ; then take four

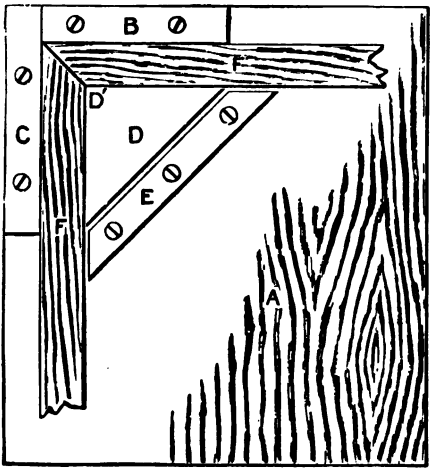


Fig. 49.—Wedge Cramp for Frames.

pieces, each 4½ in. long, 2 in. wide, 1 in. thick, and bore these 1½ in. from one end ; the other end being notched to an angle of 45°, so as to hold the corners of the frame. To test the mitres of the frame, lay the cramp on the

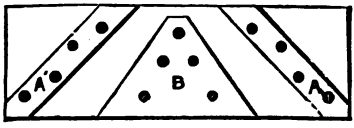


Fig. 50.—Plan of Wedge Cramp.

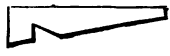


Fig. 51.—Wedge for Cramp.

bench, and adjust it to the frame as shown in Fig. 45 ; tighten up with a hand-screw or small cramp. If the joints are perfect, glue those on two opposite sides, replace them as soon as possible, and tighten up for good. The corners can then be dowelled or screwed and stood aside to dry.

Another way of joining up mitres is to plane up a stout board, A (Fig. 49), and on one surface to screw two pieces, B, C, of hard wood (such as solid oak moulding), in such a way that they form a perfectly true right angle. Then prepare a triangular piece, marked D, with one angle a right angle, of similarly hard wood, and also slip marked E similar in size to B and C, with two or three holes bored through it. When the pieces of frame are cut and ready for fixing, glue them and place them (F, F) in position on the board A. Next put D in its place, so that the right-angled corner, D, may press well into the mitre joint. Then screw down the strip E, leaving room

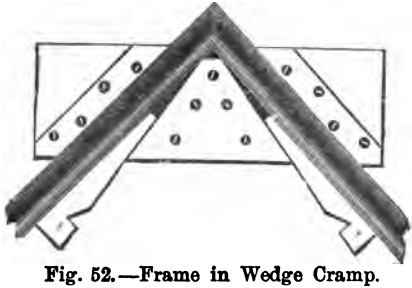


Fig. 52.—Frame in Wedge Cramp.

to insert a few thin wedges, with which D may be forced more tightly against F, F if required. For making small picture frames, a board is made with all the four corners similarly fitted, and thus the four mitres of the frame are glued and cramped at the same time.

A somewhat simple cramp in which wedges are used may be made as follows :—

Plane up true a piece of deal, 2 in. by 8 in. by 1 in., and two pieces about 1 in. long by 2 in. by $\frac{5}{8}$ in.; screw these on the large piece at an angle of 45° with the long sides, so that they form a right angle with each other, but leaving the inside corner about 5 in. apart, as shown by A, A, Fig. 50. Now plane up a piece of $\frac{5}{8}$ in. stuff, of the shape shown at B, Fig. 50, and screw it in place as shown. Now cut out of $\frac{5}{8}$ in. hard wood two wedges,

9 in. long, and about 3 in. wide at the broad end, with a notch cut in at the broader end (see Fig. 51). One piece of the frame should be fastened in place first, the joint glued, and the adjoining piece placed in position, driving the wedges in quite tight, as shown in Fig. 52. The joint may now be fastened by running a saw-kerf

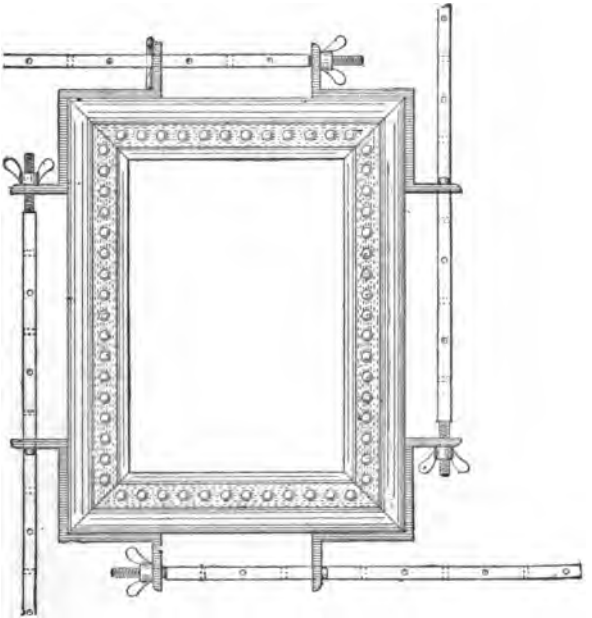


Fig. 53.—Mumford's Screw Cramp.

and gluing in a piece of veneer, as shown at Fig. 10, or by inserting fine screws. Now knock the wedges out, and treat the other corners in the same way.

Mumford's patent adjustable overframe cramp, as applied to an oblong picture frame, is shown by Fig. 53. The cramp consists of four right-angled corner clips and four square iron rods, provided at one end with a screw and nut, and drilled at intervals throughout their length

with a double set of holes, one running through the rod from back to front, and the other—indicated by dotted lines in Fig. 53—from side to side. Fig. 54 gives a side view of the screwed end of one of the rods, showing the position of the first hole.

The rods are adjusted to the size required by means of pins inserted in the holes. In using the cramp, the

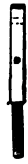


Fig. 54.—End of Rod for Mumford's Cramp.

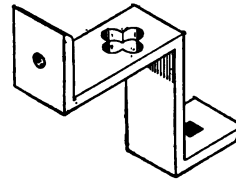


Fig. 55.—Angle-iron of Mumford's Cramp.

four mitred pieces of moulding are laid in position on a table or bench, and the four corner irons are placed close against them; the screwed ends of the rods are passed through the round holes of the angle-irons, and the square ends through the square holes. The pins are then inserted and the thumb-screws tightened up. As shown in the isometric view of the angle-iron, Fig. 55, there is a hole near the corner to allow of the mitres being nailed up without removing the cramp.

CHAPTER IV.

MAKING OXFORD FRAMES.

THE Oxford frame has long been popular, principally for prints, water colours, and engravings, its simplicity being considered, as a rule, unsuited to oil-paintings and coloured lithographs. It can be made in very many different designs, a few of the most effective of which will be noticed in this chapter.

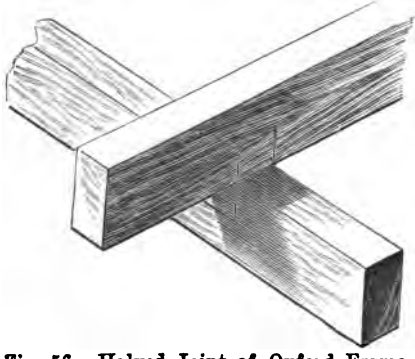


Fig. 56.—Halved Joint of Oxford Frame.

Suppose that an Oxford frame for a picture 10 in. by 7 in. is to be made of oak. Two pieces 14 in. long, $\frac{5}{8}$ in. by $1\frac{1}{8}$ in., and two 11 in. long, $\frac{5}{8}$ in. by $1\frac{1}{8}$ in., will be required.

Gauge and plane the strips to size, then set out $6\frac{1}{2}$ in. in the middle of the shorter pieces and $9\frac{1}{2}$ in. in the middle of the longer pieces. This opening allows for a $\frac{1}{4}$ in. rebate; mark round each strip with the scriber or pencil, put one strip on the other as shown in

Fig. 56, and mark for halving. Halve together in the usual manner by notching with a fine tenon saw, and the strips will be ready for rebating to take the glass.

The best rebating tool is a fence router such as coach

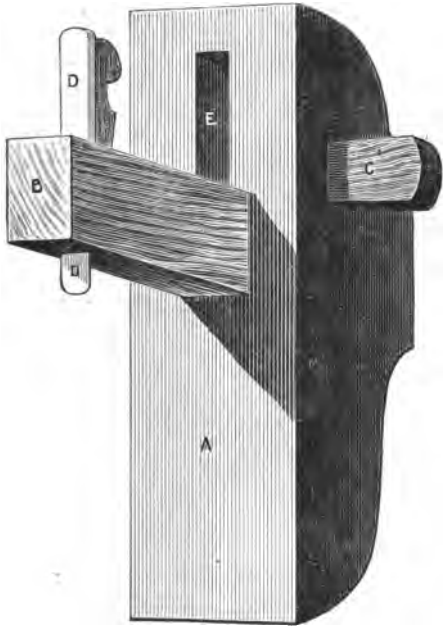


Fig. 57.—Cutting Gauge for Rebating.

builders use. Some use a rebate plane or fillister, but in that case the rebate is ploughed from end to end and filled up by gluing a piece in the end after the frame is made. Unless the wood is very hard, the rebate may be made with a cutting gauge (Fig. 57), which to be of much service must be made specially, as follows :—

Procure one piece of ash or beech, one 2 in. by $1\frac{3}{4}$ in. and $6\frac{1}{2}$ in. long, A, and another $\frac{7}{8}$ in. by $1\frac{1}{8}$ in. and 6 in. long, B. The method of putting together is shown at

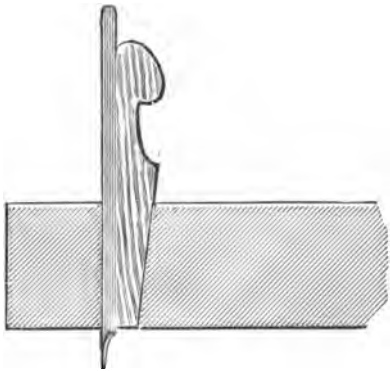


Fig. 58.—Section of Arm of Cutting Gauge.

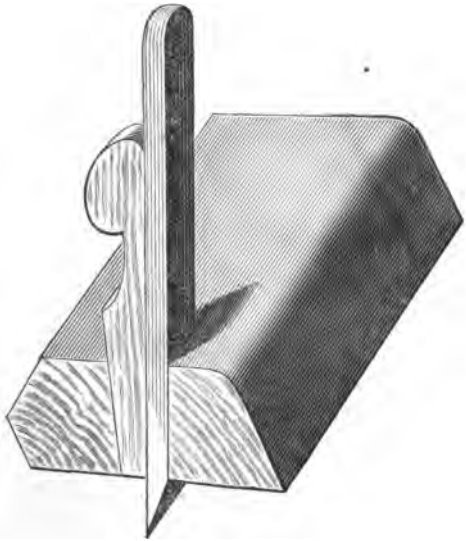


Fig. 59.—Boxing Router, or Old Woman's Tooth.

Fig. 57; A is mortised to receive B, and may be shifted backwards and forwards as in any ordinary gauge and

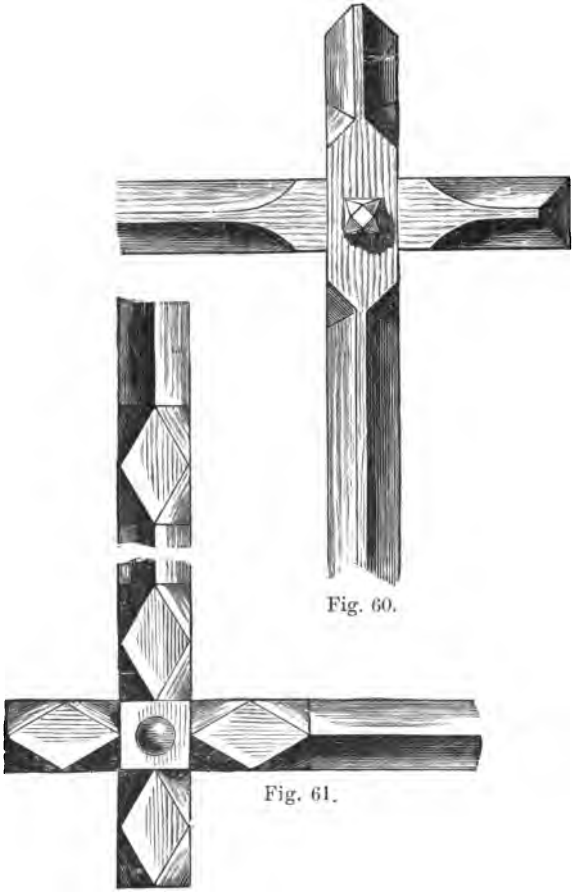


Fig. 60.

Fig. 61.

Figs. 60 and 61.—Corners of Oxford Frames.

fixed securely in position by driving in the wedge, C. The cutter, D, is made from a piece of steel or a broken ¼-in. chisel, and is secured by means of a wedge, as shown in section (Fig. 58). A recess is made at E, Fig. 57,

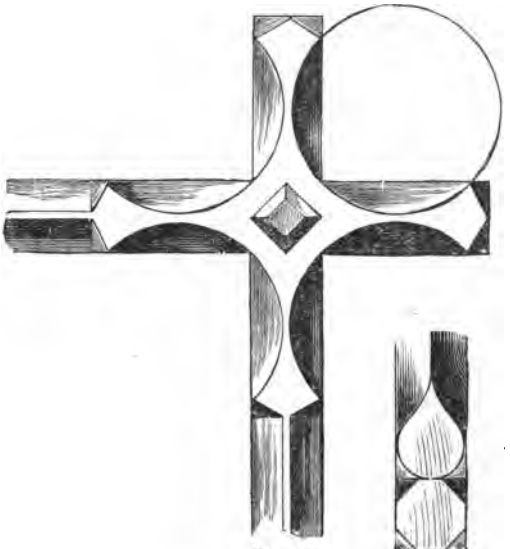


Fig. 62.

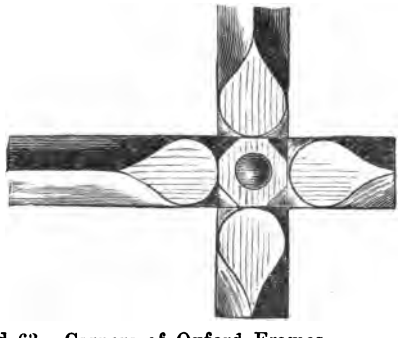


Fig. 63.

Figs. 62 and 63.—Corners of Oxford Frames.

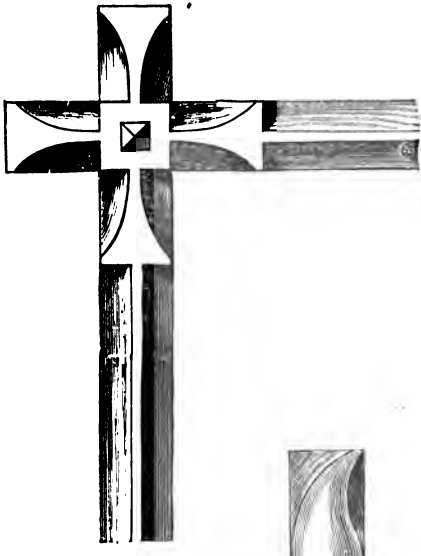
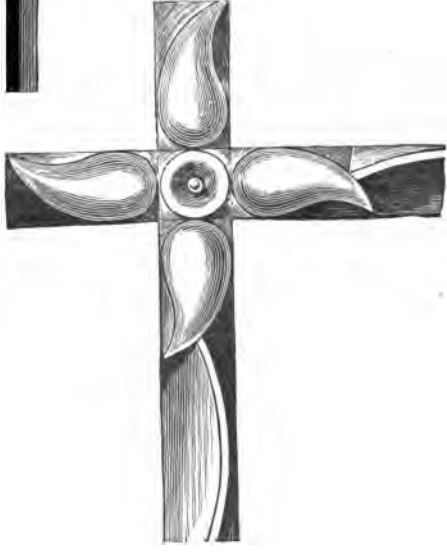


Fig. 64.

Fig. 65.



Figs. 64 and 65.—Corners of Oxford Frames.

to allow the cutter to work close for a narrow rebate. The tool shown at Fig. 57 is used as an ordinary gauge would be, but, as the work is harder, the tooth requires guiding with the finger and thumb of the left hand.

In some cases by gauging on both sides the rebate piece can be cut completely out, but in others the chisel has to be used. A boxing router or old woman's tooth will be found useful for cleaning out the rebate. A simple one, made out of a piece of wood and a chisel blade, is shown in Fig. 59. The rebate may be made

Fig. 66.—Zigzag Ornament for Oxford Frame.

with this tool alone by screwing a piece of wood on the face of it to act as a fence.

For chamfering the frame various tools are used, such as the draw-knife, spokeshave, paring chisel, and the bull-nose or thumb plane; the latter two are to be preferred.

In Fig. 60 two of the commoner methods of chamfering are shown. Figs. 61 to 65 show various methods of finishing. Fig. 62 may be marked with a coin; the others will require a cardboard or veneer templet. In the centre of the rails a diamond is sometimes left

Fig. 67.—Unfinished Pin for Corner of Oxford Frame.

Fig. 68.—Pin for Corner of Oxford Frame.

(Fig. 61), or the pattern at the corner may be repeated (Fig. 63). Fig 66 shows a method of varying the chamfer with a zigzag made by notching out a piece on each side with the chisel.

An important point in finishing is to avoid the use

of glasspaper as much as possible; it takes the sharp arrises off, and makes the work look slovenly. After chamfering, the frame may be glued or otherwise fastened together.

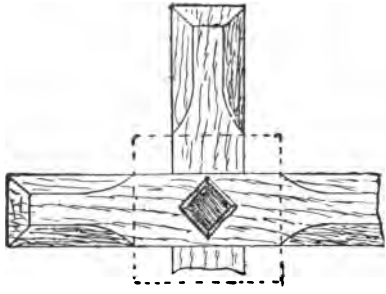


Fig. 69.—Corner of Oxford Frame.

A good way of putting the frame together is to bore a ¼-in. hole in the centre of each corner, and fasten by

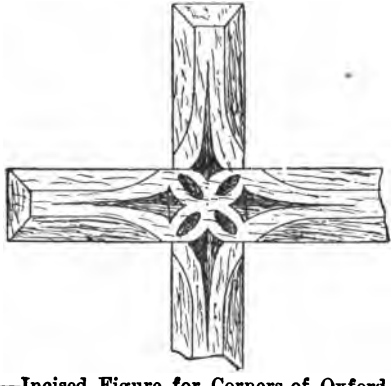


Fig. 70.—Incised Figure for Corners of Oxford Frame.

means of a rosewood or black oak pin driven right through and glued. The head of the pin (see Fig. 67) is first made square, then the corners are taken off with a chisel, leaving the pin as shown by Fig. 68.

Pins with conical or other shaped heads may be employed, as shown in the various figures.

Fig. 69 shows a common form of finish—stop-chamfers along the body of the frame and on the horns, with a

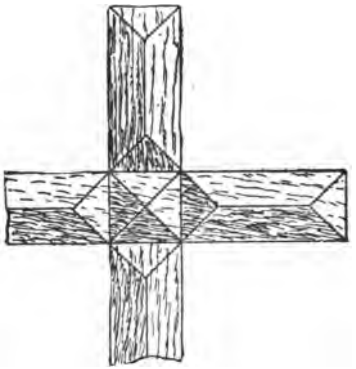


Fig. 71.—Facets cut on Corner of Oxford Frame.

common hobnail at each corner. This iron nail is much more artistic than the showy brass nails sometimes employed.

Fig. 70 is a more elaborate attempt at decoration,

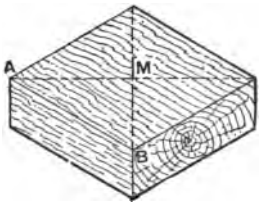


Fig. 72.—Wood for Making Oxford Frame Ornament.

Fig. 73.—Section of Wood shown by Fig. 72.

each corner having a figure incised and gilded. Any decoration on the body of the frame detracts from the effect rather than adds to it.

Fig 71 shows a finish of a different character, and

gives a good effect by very simple means, which are obtained entirely by the use of the plane and chisel. The drawings are sufficiently explanatory to require on further description.

Fig. 74.—Section of Turned Ornament for Oxford Frame.

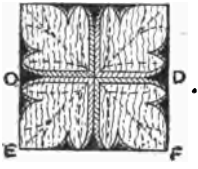


Fig. 75.—Turned Ornament for Oxford Frame.

Another effective finish is the addition of turned and carved pieces to the corners of the frame. A piece of

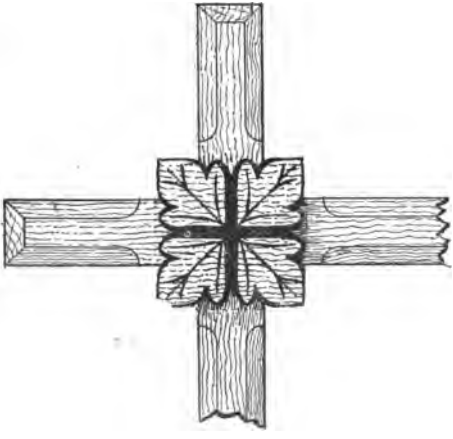


Fig. 76.—Oxford Frame with Turned Piece.

oak, say 1½ in. wide and ½ in. thick, is dressed and cut into 1½-in. lengths. Each piece is thus 1½ in. square. One of these squares is now taken and, by drawing diagonals, the centre found (M, Fig. 72). At this point

a hole is made (see section, Fig. 73), and the square is fixed on a chuck in the lathe. The block is then turned to the shape shown in the section, Fig. 74. The central hollow should not be cut too deeply, or the point of the screw might be caught by the tool. To avoid this, use a small screw, or, if a small screw-chuck is not handy at the time, another method of chucking may be used. Before removal from the lathe, it is advisable to dress

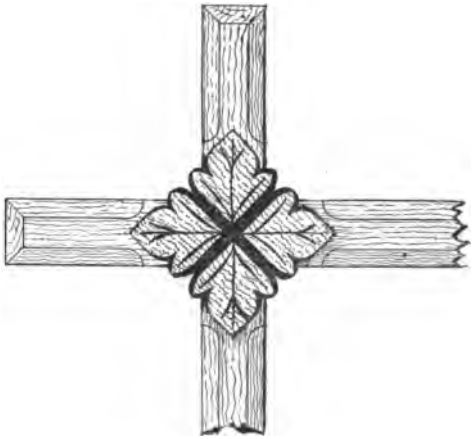


Fig. 77.—Oxford Frame Corner with Turned Piece.

the block off with glasspaper. The block is then replaced by the others which are turned. All the pieces are now glued to a smooth piece of board to keep them firm while carving.

With the V tool the face is now divided into quarters by cutting a groove down from the centre to the middle of each side. These grooves are incised deeper the farther they go from the centre, and the edges are cut quite through the ornament. These incised cuts are indicated by the blackened parts C D (Fig. 75). A little more at the edges is next taken off with the gouge.

Each corner piece is divided into a three-lobed leaf by removing a piece from each edge with the V-chisel, and then rounding with the gouge. A very shallow middle vein is next cut down each leaf, beginning at the centre and going nearly to the point. These

Figs. 78 and 79.—Sections of Ornament for Oxford Frame.

veins get shallower the farther they go. Two other veins are now made to branch out sideways from each central vein. Fig. 75 shows this clearly, the veins being shown by dotted lines. This piece is thus turned and carved into four curved leaves. Having finished all in the same manner, they are removed from the board

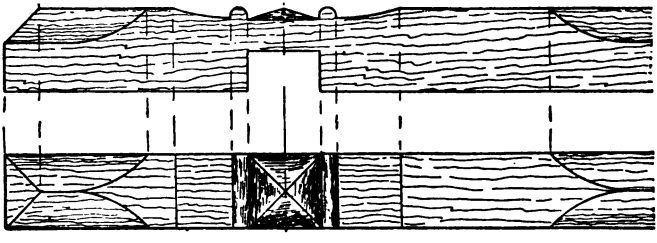


Fig. 80.—Side of Frame halved for Jointing.

by a chisel inserted under each. Any glue should next be removed from the back, and the pieces fixed at the corners of the frame, as in Figs. 76 and 77, with glue, adding, if preferred, a fancy brass pin.

Two other patterns are given in section by Figs. 78 and 79, the variation being in the centre.

In Fig. 78 the centre is left square, and when fixed on the frame it is finished off with a hobnail. Fig. 79

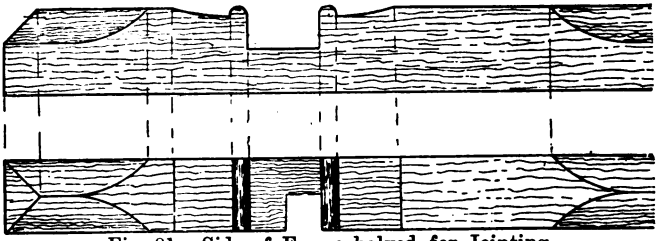


Fig. 81.—Side of Frame halved for Jointing.

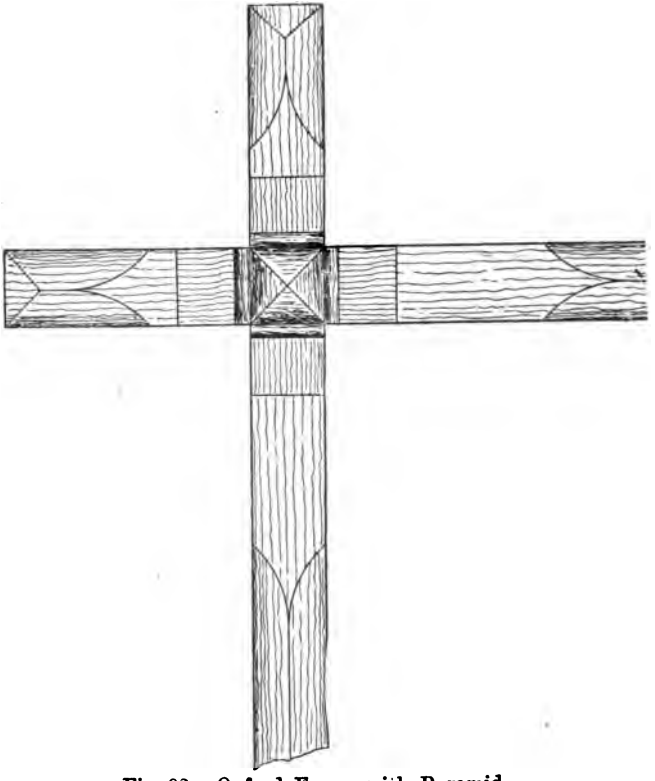


Fig. 82.—Oxford Frame with Pyramid.

explains itself, and the carving is the same in all three.

In still another method of finishing the corners of Oxford picture frames, instead of using a fancy brass nail, which becomes tarnished and black with

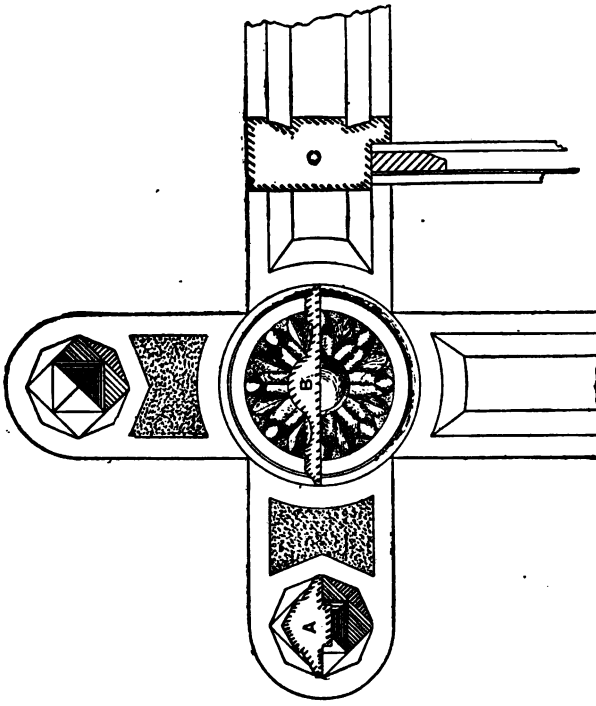
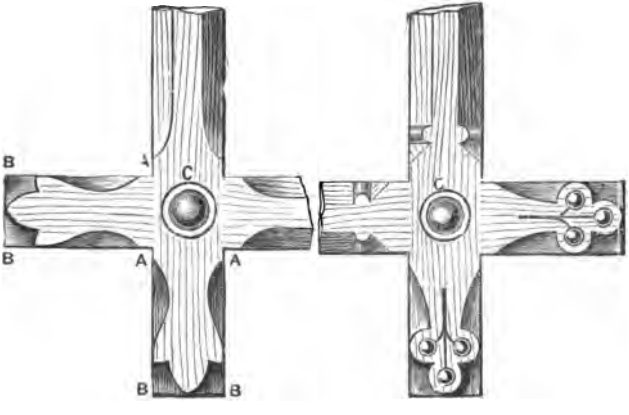


Fig. 83.—Oxford Frame with Carved Ornament.

time, a pyramidical boss is carved on one piece, with a half-round bar at each side (see Fig. 81). The reverse piece, Fig. 80, has the half-round beads carved, but the space occupied by the pyramid in Fig. 81 is here cut away in forming the halving. When together, they appear as seen in Fig. 82, with a bead surrounding the pyramid.

In making these deeply-chamfered frames, a better appearance is obtained if the chamfer is cut almost down to the glass, leaving only about a $\frac{1}{16}$ in. square edge. The chamfers should meet the flats, with a long sweep, as illustrated.

The frame shown in Fig. 83, when made of hard wood and polished, looks well. The joint is covered by a turned and carved ornament, a section of which is shown at B. A little way in on the terminals of the frame is



Figs. 84 and 85.—Corners of Oxford Frames.

a facetted ornament, as shown, which is sunk into the frame as seen in the section A. C is a section through the frame, showing the glass, gilt slip, and back. The surface of the frame is broken up by a panel, the edges of the frame being left square, as shown by the section C.

Fig. 84 shows another way of treating the ends of the frame. The face of each leaf shown is upon the same plane as that of the front of the frame, but the parts marked A and B on each side of the leaf are bevelled down from A to B.

In the design shown by Fig. 85 the surface of the

leaf may be left plain or have a sunk surface ornament. The variation round the frame from the ordinary stop to the chamfer adds much to the appearance. At c, Figs. 84 and 85, instead of having a brass ornamental stud, a circular hole is sunk in below the face, and an ebony dome-faced button is inserted.

In Fig. 86 the leaf, instead of being on the same face as the frame, is slightly bevelled from it, and,

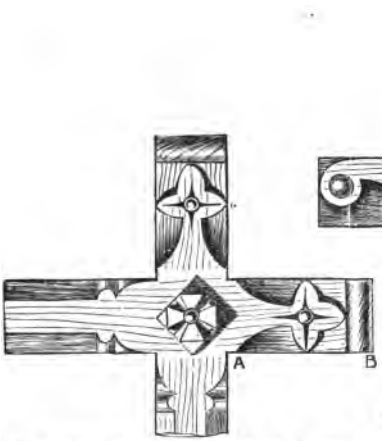


Fig. 86.—Corner of Oxford Frame.

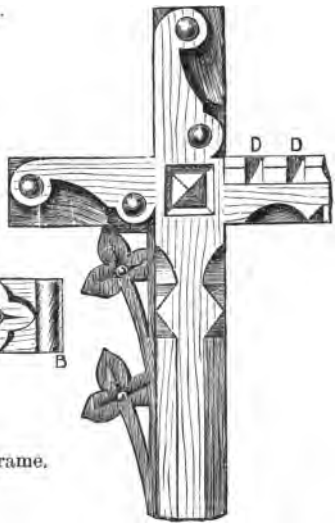


Fig. 87.—Oxford Frame with Fretwork.

instead of the splay on each side previously described, a hollow is worked, the ends terminating with a rounded roll. The intersection has a patera of ebony.

Fig. 87 shows a rather more elaborate treatment. The ends are worked and splayed in a manner similar to those in Figs. 84 and 85, and have circular sinkings $\frac{1}{8}$ in. deep. The intersections have an ebony stud sunk into a panel. The upper edge of the top rail is moulded

instead of chamfered, and the spaces marked D are cut out after moulding. Another way of ornamenting the upper edge is shown by Fig. 88. The spaces on

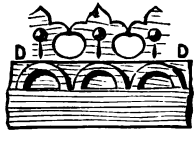


Fig. 88.—Design for Edge of Oxford Frame.

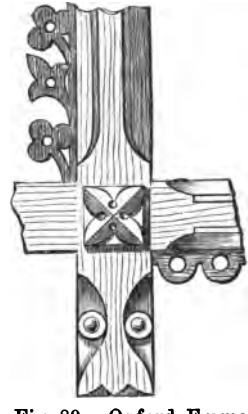


Fig. 89.—Oxford Frame with Fretwork.

each side of the semicircular scollops are splayed back as at D just described. The face of the scollops are

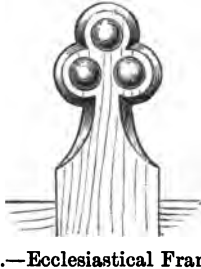


Fig. 90.—Ecclesiastical Frame.

Fig. 91.—Carving on Oxford Frame.

on the same level as the plain part of the frame, and have sinkings in each ⅛ in. deep. On Fig. 89 two different chamfer stops are shown. Around the external

edges of the frame a groove is sunk, in which may be fitted a fretwork ornament. That shown in Fig. 88 is suitable for the upper and lower edges of the frame, but the pattern shown in Fig. 87 is better adapted for the sides. If worked in ebony, the effect is very good.

In the design shown by Fig. 89 mouldings are substituted for chamfers. This design and the one shown by Fig. 87 are very suitable for ecclesiastical purposes, as is also Fig. 90, which shows one end of a large frame shaped and slightly chamfered at the edges, and having three half-spherical ebony ornaments projecting from the face.

Generally speaking, surface ornaments detract from rather than add to the appearance of an Oxford frame; but, as many object to the plainness of the faces between the inner and outer chamfer of a wide frame, carving such as that illustrated by Fig. 91, may be introduced. Narrow gilt slips tend to relieve the heavy appearance of a large frame. Frames for holding water colours may be effectively treated by gilding the chamfers, and enamelling the stops, though, as a general rule, Oxford frames are not coloured but merely sized and varnished in the natural wood.

CHAPTER V.

GILDING PICTURE FRAMES.

Oil gilding and water gilding will be dealt with in this chapter, and it must be borne in mind that a frame intended for treatment by one process is alto-

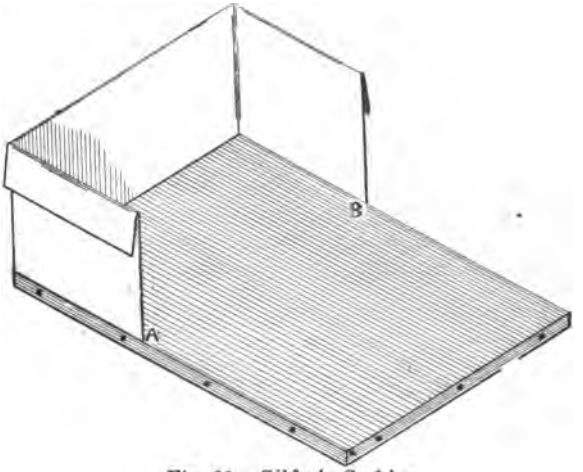


Fig. 92.—Gilder's Cushion.

gether unsuited for the other. No very expensive tools are required for gilding; a complete outfit—independent of requisites for making composition ornaments—can be obtained for from £1 to 25s. The most important accessory is known as the cushion (Fig. 92). It consists of a soft pad for cutting on, a parchment screen to keep the gold leaf together, and a simple loop holder underneath.

To make a cushion, procure a piece of mahogany,

about ¼ in. thick, squared and cut 7¾ in. by 5½ in.; spread a thin layer of cotton-wool over the wood and tack over it a bit of calf-skin (flesh side outside), care being taken not to pad with too much wool, or a decided spring will be given to the knife when used, thus causing ragged edges to the cut leaf. The parchment strip is 12 in. long by 4 in. wide, and this will allow for coming round the sides about 3 in. Turn down the top edge of parchment about 2 in. and, having attached the screen by means of a tack at A and B (Fig. 92), nail down the tape, placing tacks about 1 in. apart all round; the cushion top is then complete. Fig. 93 is a small sketch, looking from underneath, showing the loop for knife and thumb; this loop is made by cutting a strip of leather 5 in. long by 1½ in. wide, and the part nailed flat is to take the cutting knife when not in use.

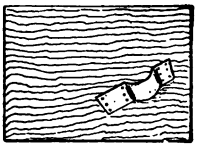


Fig. 93.—Under-view of Cushion.

The gilder's knife (Fig. 94) must have its edge

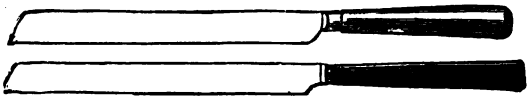


Fig. 94.—Gilder's Knives.

sharpened so that the operator may be able to pass his thumb firmly up and down without causing a cut. In this state the knife will part the gold leaf without cutting the cushion. The badger-hair tool is used in "skewing-in," as also are the hog-hair tools (Figs. 95, 96, and 97). The dabber (Fig. 98) is a large-sized camel-hair "pencil," often used without a handle; it is employed to press the gold on to the work previous to skewing. The "tip" (Fig. 99), for conveying the leaf from the cushion to the frame, is made of a thin layer of camel-hair glued between two thin cards.

As the handle consists only of cardboard, it naturally follows that the warmth and perspiration from the hands cause the card to rot, and sometimes the two

Fig. 95.—Flat Hog-hair Tool.

thicknesses part, allowing the hairs to become detached, especially at the ends of the tip. Fig. 100 shows a badly worn tool, and it is the method of repairing such a one

Fig. 96.—Round Hog-hair Tool.

that it is proposed to explain. The hair on a much-used tip always becomes greasy and dirty; to remove this grease and dirt, first get some hot soapy water in a

Fig. 97.—Cheap Hog-hair Tool.

shallow dish, and, keeping the cardboard portion well out of the water, wash the hair thoroughly, but avoid pulling it. Now put the wet hair as nearly as possible

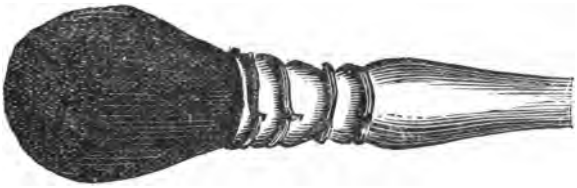


Fig. 98.—Gilder's Mop

into the original position, and tie it firmly between two small pieces of pasteboard, allowing these to come nearly down to the old handle, as shown at Fig. 101.

Having marked on the pasteboard the proper length

(about 3¾ in.) for the new handle, hold the old one in boiling water for a few minutes; the glue will melt, and the supports will drop off, leaving only the bottom ends of camel-hair protruding through the pasteboards between which they are held. Now get two pieces of very thin cardboard—that known as "London board" and "Bristol board" will do admirably—size about 4½ in. by 2¼ in., and, with a brush charged with thin glue, coat them thinly along one edge, about ½ in. wide; now lay this card upon the table (glued edge upwards), place

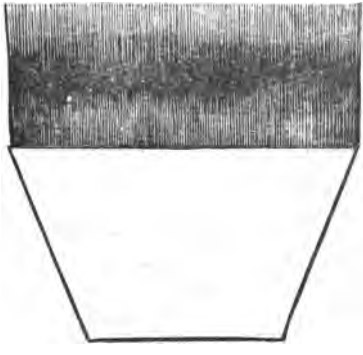


Fig. 99.—Gilder's Tip.

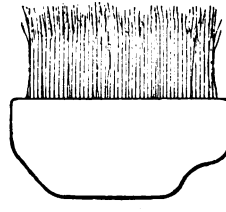


Fig. 100.—Worn Gilder's Tip.

whatever length of hair went between the old boards again in position, coat the other cardboard thinly all over with glue, and put it in contact so as to come level with the top edge A (Fig. 102). A letter-copying press is suited for holding the newly glued boards, which may be put into it and gently pressed for a short time; a vice or heavy weights will answer the same purpose; gentle pressure is necessary to keep the cardboards well in contact during drying. If the glue is thick and applied unevenly, some of it will be forced out on to the clean camel-hair, and thus spoil the tip.

When the handle has remained a short time under pressure, it may be removed, as may also the cards

which have held the hair during the process. It only remains to brush the hair by laying the tip on a flat surface, and briskly passing over it with a hat or clothes brush. The portion of the new handle which extends beyond the hair may be cut away to the dotted line, Fig. 102, and the tip will be then found practically as good as new.

Other sundries indispensable to the picture-frame gilder are various small round tools, of camel- and hog-hair, for applying preparations, earthenware pipkins, Fig. 103 (½ pint and 1 pint), a slab and muller, a palette

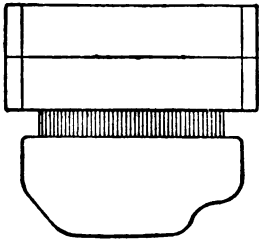


Fig. 101.—Tip between Slips of Card.

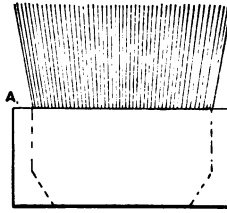


Fig. 102.—Re-made Gilder's Tip.

knife, an old thin penknife, a scraper, some old linen, a wash-leather, some emery-cloth, and some fine glass-paper. The gilder's raw materials comprise oil and matt gold size, whiting, clay, parchment cuttings, raw and boiled linseed oil, resin, glue, turpentine, etc. Gold leaf is sold in books of twenty-five leaves or in packets of 500 leaves.

Ornamental mouldings intended for gilding are sold in 12-ft. lengths; when a frame has been made up from these it will be understood that the intersection of ornamental parts, at the mitres, is rarely satisfactory, and so ornamental corners are added to hide any defect. When a frame is made up, a mould suitable for a corner is selected, and the work of making and mounting the ornaments proceeded with. The material known as

gilders' composition is a mixture of glue, oil, resin, and whiting. To make it, a quantity of glue is placed in a saucepan and simmered with just enough water to melt it; the resin is melted in a separate vessel, sufficient linseed oil is added, and the whole mixed

Fig. 103.—Earthenware Pipkin.

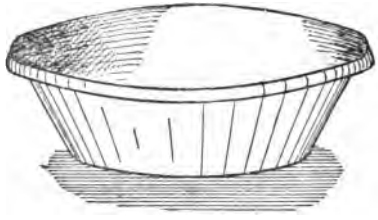


Fig. 104.—Mixing Pan.

thoroughly together over a slow fire. A large deep pan (Fig. 104) is three parts filled with finely-rolled whiting, and the contents of the saucepan are slowly stirred in. When of about the consistency of stiff dough, the composition should be placed on a level board to be thoroughly kneaded and then rolled with the pin (Fig. 105), and finally cut into flat squares of 3 in. or 4 in.

Fig. 105.—Rolling Pin.

and put by until required for use. If stored in a cool place and embedded in whiting, this composition will last for several months. The moulds from which the ornament is made are usually of boxwood, and they are expensive, as every piece of wood has to be engraved skilfully away by hand. A screw-press is employed to force the composition into the mould. Other accessories include an old table knife (worn thin), a pot of sweet oil, a small hog-hair brush, and half a dozen pieces of deal board, each about 5 in. wide, 2 ft. long, and $\frac{1}{2}$ in. or $\frac{3}{4}$ in. thick, which should be

planed on both sides. The steamer (Fig. 107, p. 70) may be constructed by fitting a tin can, having a bottom of perforated zinc, into an ordinary small saucepan.

In commencing the casting of a set of ornaments, fill the saucepan half full of water, fit the top on complete, and heat almost to boiling point; next place three or four squares of composition into the tin and close the lid. If the composition has been made for some time it will take several minutes to become quite soft; in the meantime, coat the mould thinly and evenly with sweet oil, taking care that it finds its way into every crevice of the ornament. A thorough oiling is of the greatest importance, for wherever the wood is left bare,

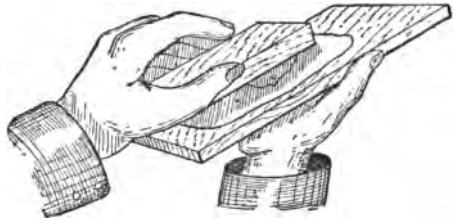


Fig 106.—Method of Removing Mould.

the composition will stick and the casting will be a failure. The soft composition is now taken from the steamer and thoroughly kneaded on a board which has been freely sprinkled with whiting; if, after this process, it is found to contain little lumps, it must be returned to the steamer to soften a little more. If steamed too much the composition will be completely honeycombed with tiny holes; in this state it is difficult to get sharp ornaments. When thoroughly soft and cool, a piece of the composition, having a flat surface, is placed on the mould and firmly pressed in by the operator with his two thumbs. Dip one finger in warm water and pass it over the composition, place the mould face downwards on one of the planed boards, and put in the press. A deep mould requires much greater

pressure than a shallow one. On withdrawing the board from the press, the mould is lifted from the side having the deepest ornament, as shown by Fig. 106. At this point it is likely to stick if the composition has been placed in the mould without having been thoroughly kneaded and rolled in whiting, or if too much pressure has been exerted. If the composition sticks, the mould must be pulled away by force and placed in a basin of cold water until the composition has so far softened that it can be brushed out of the ornament. In no case, however, must a knife or other metal instrument be used to pick the mould, as every

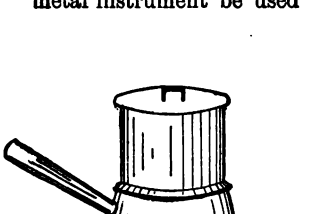


Fig. 107.—Steamer.

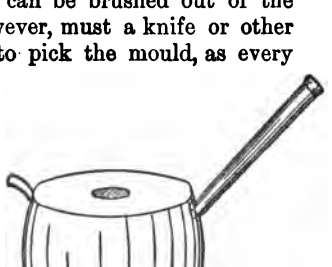


Fig. 108.—Saucepan.

scratch inflicted will be reproduced in subsequent impressions. The only thing admissible for picking the mould is a small pointed stick of very soft wood. When the casts come away nicely, cut away the superfluous material at the base, keeping the blade perfectly flat.

No beginner can hope to succeed with matt work until the oil process has been thoroughly mastered, so oil gilding will be carefully explained first. Taking an ornamental frame "in the white," the first thing to do is to mount and "back up" the corners, etc. For this process a metal lid must be made to fit over the saucepan, and it should have a hole about ¾ in. in diameter cut in its centre, as shown by Fig. 108. A piece of perforated zinc about 7 in. long, and its upper

end tapering, should be cut out (see Fig. 109). A clean saw-cut should be made in the end of an old tool handle, and the wide end of the zinc inserted and secured with a couple of small screws. This tool is used to support the composition ornaments during softening, and for transferring them from the steamer to the frame. To commence moulding a set of corners, fill the saucepan with water, and heat it to boiling point; place the lid on, and put the frame in a flat position near the steamer. Having tried the corners on the frame, and decided where they shall go, place one of them on the perforated holder, and move it to

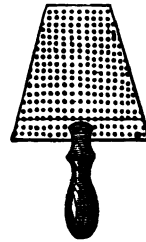


Fig. 109.—Tool for Handling Soft Composition Ornaments.

and fro in a circular sweep over the hole through which steam is issuing; continue this until every part of the ornament is perfectly soft and pliable. The softening must not, however, be carried on until the face of the ornament is white and sticky, or it will be certain to lose much of its sharpness when adjusting it on the frame. When the composition is thought to be sufficiently softened, the ornament should be slid from the holder to the frame and all points quickly pressed down, so as to come in contact with and adhere to the moulding. If the corner cracks, or points spring up, it will be clear that the softening has been insufficient. The operator must be careful not to press repeatedly on the sharp front of a soft ornament, or the pattern will be flattened. When the corner-piece is placed on a

flat moulding (Fig. 110), every part comes in direct contact with the frame, and no backing up is required ; but, in the case of a deep pattern (Fig. 111), the portions overhanging will need to be backed with soft composition in order to give strength and support to the corner. In the case of heavy corner ornaments, drive brads into the frame at whatever angle the cast is required to stand ; these brads form a very good support, though the usual backing is done for the sake of appearance. After a frame has been mounted with corners, it should be allowed to hang for at least twelve hours before

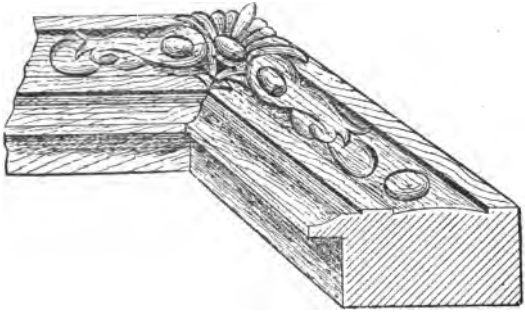


Fig. 110.—Corner-piece on Flat Moulding.

backing up is attempted, and then four or five hours more before preparation for gilding is commenced.

Stopping, the first step in the way of preparation, consists of making good any cracks or splits, filling brad-holes, and bringing up sharp any portions—plain or ornamental—which may happen to be imperfect. The putty for whitened plain parts is made from melted parchment size and gilders' whiting ; that for ornaments is simply composition, which is kept very soft in the palm of the hand. Stopping must be very soft to adhere to the frame perfectly. To become hard, the putty takes from five to seven hours in summer, and often ten hours in winter.

The next step is to glasspaper down all plain parts

until quite level and smooth. In rubbing down fillets or flats, the glasspaper is held tightly over a flat piece of wood, in order to ensure an even face; back hollows and the less important parts are brought smooth by the paper being held by and worked over the thumb. Guard against rubbing a plain surface into hollows, as the least unevenness shows up badly when the frame is finished.

Claying is the next process. Gilders' clay is sold either in hard lumps or ground in water ready for use. The latter is preferable, because it only needs mixing

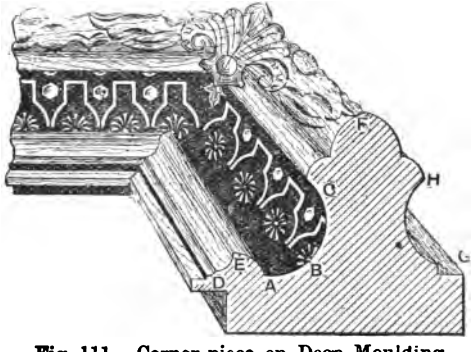


Fig. 111.—Corner-piece on Deep Moulding.

with parchment size to be ready for application. A thin coating of clay is applied to the frame as a foundation for subsequent preparations; it is put on just warm enough to work freely in the brush and to lie smoothly. When dry, it is only necessary to add a coating of clear parchment size, and the frame will be ready for oil-sizing. The size mixtures become weaker and weaker until the finishing coat, which is applied after the frame is gilt, is reached.

The operation of oilsizing requires both care and judgment. Oil gold-size consists of yellow ochre and boiled oil ground together, and such care is required in making it that gilders find it expedient to purchase

the size ready ground. As sold, the gold-size is too thick for use, so, to be always ready for use, it should be prepared as follows: Cut out a piece of the ground size, place it on a slab, and by means of a palette knife gradually work additional boiled linseed oil into it until it is in a semi-liquid state. Continue the mixing until a good-sized jar has been half filled, then stir in more oil and strain the whole through a piece of linen into another jar. When applied, the oil is, of course, considerably thicker than boiled oil; but experience alone will show the thickness which gives the best results. A large hog-hair tool is employed for oiling, and the gold-size must be applied so sparingly that it does not gather in the bottoms of ornaments, neither may any parts be missed. If the oil is applied too freely, every little depression in the pattern will quickly become red through the body of oil which is settling in it. Eventually, also, the bottoms will peel, and the frame become disfigured.

Should anything happen to retard or destroy the drying quality of the oil, the work will be spoiled. The loss of the property of drying (and bearing a hard "tack") may result from the effects of frost, or the handling of the parts to be gilt during preparation. The hand imparts just enough greasy moisture to make the oil dry badly. A third cause is a badly prepared foundation, or the presence of foreign matter in the mixtures. As there is no cure for "greasy" oil, the whole preparation must be gone over again. After oiling, the frame will require to hang from ten to fifteen hours. Press a finger gently on the oil, and draw it sharply away; if ready for gilding, there will be a loud snap as the finger leaves the surface; this is called "tack"; there must be a strong tack present if good results are to be obtained. If there is little or no tack, the work is either drying slowly, or something is wrong; under any circumstances the gilding must be postponed until a proper tack is obtained.

Laying on gold leaf for the first time is an awkward matter. With each breath the leaves of metal are liable to be lifted above the cushion. The best plan on commencing is to turn out several leaves only, and then to gradually increase the number each time the cushion is stocked, until the operator is able to control a whole book at one time. The gold having been turned out, the cushion is taken in the left hand together with the tools used in laying; the tip goes between the first and second finger, while the knife is pushed either into the loop made to take it under the cushion, or held, when not in use, by the fourth finger. The dabber is taken in the right hand—the top end projecting out from the fourth finger—and is held and used in this position during the whole process.

A gilder should learn at the start what is really the least amount of gold that will efficiently cover an ornament without excess and waste. Flat ornamental parts, and those in low relief, will be covered with less gold than a deep bold member of the same size; while plain parts in oil gilding only require one single covering. To illustrate a method of "laying," attention is directed to Fig. 111, p. 73. This pattern should be commenced by laying on a strip of gold leaf wide enough to reach from A to B, and each width should be carried the whole length of one side of the frame before a second and different sized strip is taken in hand. A piece to reach from C to A will be found sufficient to complete the inside ornament, and a strip at D, followed by one dropped on at E, and wide enough to lap into the hollow, will suffice for the inner members left uncovered. The top ornament F should be covered with leaf just wide enough to reach its base; the gold placed on the two narrow plain parts, immediately below it, should be of sufficient width to lap well on to the top ornament on both sides. Having placed a strip of gold leaf round the ornament G, the back hollow is taken in hand, a difficult matter for the beginner. In laying a hollow of this description, the leaf is cut to the size required to

cover the whole depth and to overlap a little on the outside ornament. Picking up each length by the edge (so that nearly all the gold leaf flies in the air), the edge which is confined to the tip is brought into contact with the sharp point H; then, by a series of gentle touches on the hanging metal, it is made to bend rapidly into the hollow and the dabber is passed over it. The chief difficulty will be found in getting these large pieces of leaf into position without splitting them; and though on plain parts cracks in the gilding may be almost obliterated in the subsequent skewing, it is, nevertheless, a great mistake to rely on the final brushing-in. During the process of oil gilding the dabber is used to press the leaf on to the surface of the work. Many operators lay a member the whole length of the frame before dabbing down, while others bring the dabber into use much more frequently. The dabbing is very rapidly accomplished, and, after a little practice, is a simple process.

When the frame is well covered with leaf, it is ready for the process of "skewing-in." Having placed the roughly-gilded work upon a clean sheet of paper—large enough to project at least 1 ft. all round the outside of the frame—pass the badger-hair tool, with a decided circular movement, over one whole side of the frame, one member at a time. As a result, much of the loose gold disturbed will find its way into those parts of the ornament where none has previously penetrated, and a large quantity of dust will gather on the paper; this is lightly gathered with the soft tool and brushed into the ornament to complete the actual skewing-in. A hog-hair tool may be employed to remove all remaining roughness, and to free the work of loose particles of gold, but the greatest care is required, for it is easy to remove the gold from the tops of the ornaments. It is not absolutely necessary that all creases should be removed from a plain part in skewing, as they disappear generally after the final sizing.

It now remains to finish-size and "colour" the frame.

Oil gilding is sized down almost invariably with very weak, clear size, which, however, should not be so weak as to produce a purple tinge. If strong finishing size is used, it will peel and bring away much of the gold with it after a lapse of time. There will be the same result if the size is flooded on and allowed to gather in the bottoms of the ornaments.

Gilders' "colouring" is a mixture of whiting, yellow ochre, and size used for coating the outer edges of frames or the backs of ornaments, and is mixed so as to appear, when dry, nearly the same colour as the gold leaf itself. Those quantities of each ingredient which produce the best match for the gold in use may readily be ascertained. The preparation will not keep, and should therefore be made in small quantities and used directly it is made.

The subject of water gilding may now be considered, taking, as an example, a plain, flat, hollow frame suitable for placing within the ornamental moulding just completed. The bare wood having been first coated with "thin white"—a mixture of size and whiting applied hot—it receives from three to five additional coatings of thick whiting; it is then cleaned with a knife (or metal pattern made to fit the moulding), and is smoothed with a flat stone and water. It may be added that all plain mouldings are sold whitened ready for gilding.

To commence the preparation of the matts, glasspaper the flat surface to remove all unevenness. A light, even touch is required in order to avoid deep scratches, and the block round which the glasspaper is wrapped must not be allowed to rock on the edges of the matt.

The whole surface is now covered with the clay mixture previously described, and then coated several times with matt gold size; the latter is simply stirred into parchment size of not quite full strength, and is applied when of about the same consistence as the clay. The matt now receives a thorough rubbing down with fine

emery-cloth held on the thumb; after only a slight rubbing tiny dull spots remain, and the surface is not sufficiently rubbed down until these have disappeared. As a precaution against taking off the edges, employ only old worn cloth near the edges. After the work has been rubbed, it is ready for "washing." This consists in passing rapidly over the frame a piece of wet linen folded flat and four or six times doubled. Here, again, the edges are in danger, and the very greatest care must be exercised to avoid rubbing through. A large camel-hair tool removes all superfluous water, and the frame is stood aside for a short time before being polished.

It is difficult for one unaccustomed to the work to judge when a matt is ready for polishing, and so the beginner should practise on a short length of moulding, washing the whole, and polishing little bits—using only a square of cloth for rubbing—and thus ascertain the length of time to produce the most even polish. Of course, the temperature of the room has a great deal to do with the drying, and, wherever water has been allowed to stand, longer time will be required.

When polished, matts are coated with a mixture made by melting a piece of size about as large as a filbert-nut in about half a pint of water; allow the work on which it is placed to dry well before commencing to gild. To "lay" a matt is the most difficult process in the whole gilders' art. Taking the cushion and tools in hand, precisely as in oil gilding, a camel-hair tool taking the place of the mop, make a start by cutting the gold to the required width for the moulding, minus the hollow. Dip the camel-hair pencil into clean water, and with it wet the moulding at the left-hand end. A small, white gallipot or jam jar is a very suitable vessel for water, as being heavy, it bears the pressure of the brush on its sides when removing superfluous liquid. The wetting must be thorough, and the leaf must be dropped from the tip before the surface of a matt begins to dry, or it will be certain to wipe off. If the operator is nervous in

handling the tip, and does not drop the whole width of the leaf deliberately and simultaneously, the gold leaf will crack as it is applied. Each fresh strip of gold should lap slightly over the last, and in no case may the matt gold size show between the joins, even though a second layer of gold is to be put on. When the flat frame has been gilt round and allowed to dry, again

Fig. 112.

Fig. 113.

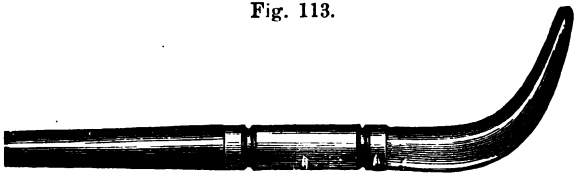


Fig. 114.

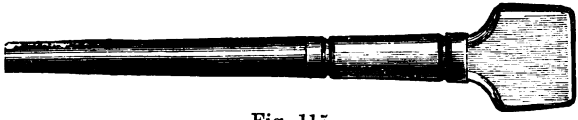


Fig. 115.

Figs. 112 to 115.—Reeves & Sons' Agate Burnishers.

coat with weak size of less than half the strength of the first, and when this has dried, go lightly over with cotton-wool to remove the roughness.

The matt probably will now present a poor appearance, for where the work was not properly wetted the gold will have vanished and all the cracks will stand out distinctly. It is usual to double-gild good matt work, and, whether this is done or not, every defect must be made good by touching the spot with water and

dropping on bits of gold. In the case of single gilding the final sizing would now be given ; but, supposing that the frame in hand is to receive a second layer, the whole width must now be covered again. The second layer is wiped off with cotton-wool as before, and, when any remaining faults have been covered, the matt is ready for fine size.

There are two kinds of this preparation—one consisting of clear size and water, the other of size, water, and gilders' ormolu. Matts are generally sized down with the latter, because it imparts a dead, solid appearance to them. In sizing water gilding, the tool should always travel over the surface in the opposite direction to that in which the work was gilt, so as not to upset the joins ;

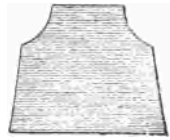


Fig. 116.—Guide for Agate Burnishers.

thus, in sizing a flat frame, the operator would start at his right hand and finish at his left.

Burnishing is the last of the processes employed in gilding picture frames. The agates (Figs. 112, 113, 114, and 115) are shaped for hollows, fillets, etc. ; the guide (Fig. 116), made of steel or stout zinc, is employed to guide the agate along the side it burnishes. Fig. 117 shows a wire frame over which is stretched a piece of tissue paper ; this is used to test the quality of a burnish, by holding it between the latter and the source of light. The process of mixing burnish gold size is similar to the mixing of matt size, and, of course, the burnish is stirred into the size. In oil gilding, those parts which are to be burnished are " wiped off," after the frame has been oiled, and then sized, first with matt and then with burnish gold size. In water gilding, the bead, fillet, or whatever member it may be, is

coated with burnish size simultaneously with the gilding of the matts.

It will be readily understood that burnishes rely for their lustre on the polished leaf which composes them, and thus on a perfect covering of metal the utmost cleanliness is the first essential in securing a good burnish. A cause of failure is dirty size or the settling of dust on the size whilst it is drying. Whenever a particle of dust settles on the wet gold size it sticks until the agate burnisher passes over it, when it is dislodged, carrying with it the gold and leaving a black speck. When the least grit gets into the size during mixing, the latter lies roughly; and, when the agate passes over the roughness, much of the gold is often carried away. After the parts are prepared, they are gilt exactly after the fashion of ordinary matts, the only difference being that there is one layer only, and that no weak size is used either before or after gilding. When laying the burnishes, care is required that the camel-hair tool does not wet the ends of the strips of gold where they join; where this happens a stain appears on application of the agate.

Fig. 117. — Screen for Testing Burnish.

Burnishes on a whiting (matt) foundation are generally ready for the burnisher in one hour from the time of laying; when on composition ornaments, however, much longer is required for drying. In bringing up a surface a good even pressure is required, the agate passing to and fro until all dead streaks disappear; and the screen, Fig. 117, should be frequently held over the work so that the operator may see that all is going right. After rectifying faults, all loose gold may be brushed from the sides of burnishes, and finish size may be applied to the frame at once.

The following instructions on cleaning gilt picture frames refer to work that has been executed by one of

the two processes—oil or matt—just described. It is assumed that an English gilt frame, carrying oil, matt, and burnished work, the whole being dusty, fly-marked, and dull, is required to be renovated.

It is obvious from the foregoing instructions that constantly passing over a gilt surface with water, in order to remove obstinate marks, would clear away all the size and, in the case of matt work, the gold also. It therefore becomes necessary to resort to something sufficiently strong to remove all marks with two or three touches.

Having thoroughly brushed the loose dirt from the gilding, fill a large pan with cold water, and, using a soft hog-hair brush, pass over all ornamental parts, carefully avoiding the burnished work and frequently changing the water. This will remove all dust and most fly-marks ; the work must then be left to dry thoroughly. Repeat the process on all plain parts, using a large camel-hair pencil instead of the hog-hair tool. When all is perfectly dry, add to ½ pt. of water ½ oz. of methylated spirit and ¼ oz. of ammonia. Charge a small camel-hair pencil with this and pass gently over any parts where fly-marks remain. Each time the brush is removed from the work it must be rinsed in a jar of clean water and squeezed out before being re-charged with the spirit mixture. The quicker a portion in hand is cleared the better for the work ; in no case should the brush be passed twice over any parts where the gold has risen and shows signs of becoming detached.

When the whole of the frame has been cleared of dirt, attention is turned to the burnishes. These will probably be looking very dull and cloudy ; but if no liquid has been allowed to get upon them, their appearance may be greatly improved. Fold a piece of new wash-leather so that it fits well into the burnished hollows, etc. ; breathe lightly upon a small strip of the work, quickly place the dry leather in position, and push or roll away the dirt and dust. The surface of the burnishes having been polished, it will be found that

fly-marks will generally yield to the leather; but on no account must the rubbing be continued when the ground begins to rub thin. As a precaution against over-doing a burnish, it is well to hang a tissue-paper screen between the work and the source of light; this enables the operator to see when he is rubbing through into the burnished gold-size. Much practice is necessary to avoid taking off the outer edges of hollows and fillets. Burnished "bubbles" and scrolls are cleaned by means of the leather drawn tightly over the thumb. A coating of clear or dead finish-size will vastly improve the appearance of the gilding. Clear size will generally be found on ornamental work, whereas the plain parts are mostly sized with ormolu; this is the reason why matts usually have an uneven, patchy appearance after being cleaned. The streaks and patches are caused by the size being partially removed at places, but the solid surface is restored on the application of new size, provided, of course, that it is of the proper strength and quality.

Where gilding is likely to get a considerable amount of handling, it is sometimes coated, after being sized, with spirit varnish; when such is the case, the mode of procedure in cleaning is slightly different. A camel-hair tool charged with cold water will usually bring away all dirt; but in places where constant handling has broken up the work and discoloured the varnish, it will have to be removed. This may be accomplished by passing methylated spirit over the spot with a soft brush until all dirt is brought away. Such treatment necessitates a new coating of white hard varnish.

The cleaning of foreign or "washable" gilt-work is a simple matter, inasmuch as very little can be done beyond a thorough brushing with water. Fly-marks are difficult to remove from a cheap gilt moulding, and are sometimes very disastrous to the gilt surface beneath them. It will be found, on removing the marks from an English gold matt, that the leaf is neither damaged nor discoloured; but in the case of foreign gilding the

gold is completely destroyed: when the marks are washed off, unsightly white spots appear. There is no real remedy for such a state of things; if the frame is of much value, the best plan is to touch-in the spots with the very best gold paint. The use of gold paint on picture frames is, however, discouraged, as sooner or later, by exposure to the atmosphere, the paint is sure to turn black unless protected by varnish, and this imparts a brassy appearance. Gold paint is made by mixing

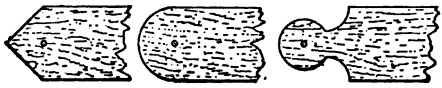


Fig. 118.—Ends of Frame Tablets.

gold bronze powder with gum water, pale copal varnish, or white spirit varnish, both of which should be thinned with turpentine, or it may be mixed with a solution of collodion cotton in amyl acetate diluted with petroleum ether.

Picture frame makers often have to place some kind of inscription or name upon a frame.

A gold tablet for an English gold frame is made by cutting a piece of pine to the required size (usually

Fig. 119.—Lettering on Frame Tablet.

about ⅛ in. thick), and finishing the ends after one or other of the styles shown in Fig. 118. The wood must next be matt gilt in accordance with the foregoing instructions. Various styles of writing are given in How to Write Signs, Tickets, and Posters. Select a bold Roman letter, and carefully draw the desired title on tracing-paper, as in Fig. 119. Place a strip of carbon paper, prepared side downwards, on the face of the tablet,

and lay the tracing in position upon it. The outline of the lettering must now be gone over firmly with a pencil, and, on removing the papers, the words will be found transferred to the tablet. Water-colour will be found about as good as anything for filling in the letters (Fig. 120), as in case of a mistake it is so easily removed without disturbing the gold; if any colour other than black be employed, it is well to add a small quantity of permanent white to make a body. When dry, the whole is quickly coated with white hard varnish, applied with a large camel-hair brush.

A very pretty style of tablet for a gold frame is made by preparing the ground with whiting, as in

Fig. 120.—Name Tablet for Frame.

Fig. 121.—Ornamental Nail-heads.

the earlier stages of gilding, and mounting the name with letters cut from a thin strip of composition. The ground may be left smooth or "sanded"; in either case it is gilt in oil, the surface of lettering being wiped off, coated with burnish gold size, and burnished with an agate.

A foreign washable gilt tablet can be made by cutting away the rebate of gilt flat mouldings, cutting the ends to any design, and writing and varnishing as before, the ends and edges being whitened and gilt, or covered with good gold paint. It is usual to fix the tablet with two small pieces of soft composition, and, for the sake of effect, an ornamental brass nail—such as one of those shown in Fig. 121—may be placed at the ends.

CHAPTER VI.

METHODS OF MOUNTING PICTURES.

MOUNTING-BOARDS are sold in sizes to suit various pictures; those called Royal, measuring 24 in. by 19 in., and Imperial, which measure 30 in. by 21 or 22 in., are the sizes likely to be the most useful. Pictures that require mounting must be carefully treated, or else they may be ruined. Almanacks and presentation plates are often very much improved by cutting the margins from the edge of the picture, and mounting it on a white mount. Engravings and pictures of value should never be interfered with in this respect, but should be mounted just as they are; to cut away the white, the signature, etc., would detract from the value of the picture.

Place the picture to be mounted face side down on a clean sheet of paper (or the underside of a mount), with a clean brush give it a coat of good flour paste, and let it stand five or ten minutes to allow the paste to sink well into the picture. Then give it another coat of paste, and if it is perfectly soft and lies down quite flat without an inclination to curl up, it is ready for being mounted. Pick it up carefully to avoid tearing, and place it in position on the mount; cover it with a sheet of clean paper, and, working from the centre with a duster, rub it carefully down till air-bubbles and wrinkles disappear. If a little paste has oozed on to the edges of the mount, carefully wipe it away with a sponge and clean water. Now put the picture to dry under another mount, or a sheet of cardboard, and place a few books or weights on it to keep it flat.

Large pictures are often mounted on calico, which is stretched and tacked down on a flat board or table top, and the picture is then mounted on the calico precisely

the same as on the cards. When perfectly dry the calico is tacked on to a flat frame of wood. Another method of mounting, or stretching, large pictures is to mitre together a flat wooden frame of the size required for the picture. Lay the picture face down on a table top, and evenly damp it with a sponge and water till it is perfectly flat and pliable. Then glue all round the face edge of the frame, place the frame on the back of the picture, and see that the frame touches the picture closely all round. Allow it to dry evenly and slowly without heat in a horizontal position, and the result will be that it will be stretched tight without wrinkles.

Pictures are often much improved by what are called sunk mounts. The picture is first mounted in the usual way, and then a second mount is cut with an opening in it, to reveal as much of the picture as is

Fig. 122.—Mount-cutter's Knife.

thought necessary. This is placed in position over the first mount, and the two are fastened together.

Sunk mounts are usually cut from cardboards known in the trade as "fine mounting boards"; the most usual substance for the work is "eight-sheet," though very large mounts are often cut from a much thicker stuff. The various names and sizes of the trimmed boards are as follows: Royal, 24 in. by 19 in.; Imperial, 30 in. by 21 or 22 in.; Atlas, 33 in. by 26 in.; Double Elephant, 39 in. by 26 in.; Double Imperial, 43 in. by 29 in.; Antiquarian, 53 in. by 35 in. The tools, etc., required to practise the art are: knife, steel bevel, deal board, compasses, rubber, oilstone, wooden straightedge, T-square, and a 2-ft. rule. The knife is specially made for mount cutters, and has a stout brass-bound handle fitted with a movable steel blade, which can be adjusted at will (see Fig. 122). The wooden straightedge should be

fully 32 in. long, so as to take the length of the Imperial board; the compasses must be 8 or 10 in. long.

Fig. 123 represents the method of setting out a rectangular mount. The lower edge of the mounting-board A having been cut perfectly straight, mark off the

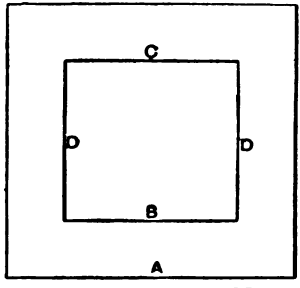


Fig. 123.—Rectangular Mount.

nearest parallel cut B, and distant from it the width of the required opening mark a second line C. The T-square, placed against the trimmed edge A, will then give the perpendiculars D and determine the length. When severing the card, the deal board is placed so that the

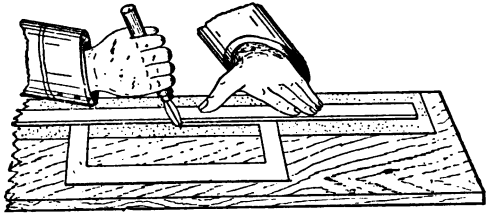


Fig. 124.—Method of Holding Mount-cutter's Knife.

pressure comes as near as possible along its centre, and it is usual to lay a strip of pasteboard between the board's surface and the mount; this forms a suitable material to protect the thin blade when it comes through the mount, and prevents the ragged edge on a bevel which results from cutting on bare wood. In

cutting out the opening, the straightedge is held firmly with the left hand (Fig. 124) while the board is cut through with the knife held on the slant. After the middle has been removed from a cut-out mount, it should have a clean bevel entirely free from raggedness; to ensure this, it is necessary to keep the knife in thorough working order. In Fig. 125, good and faulty bevel edges are shown. The first (A) would be called good; the hollowed appearance as at B is mostly caused by excessive pressure on the knife and the consequent bending of the blade; C illustrates a roughness often noticeable when the knife is out of order; while D

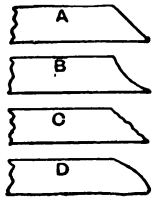


Fig. 125.—Edges of Mounts.

shows the blunt or rounded edge which is the inevitable result of attempting to cut a bevel with a free hand. To obtain the best result, therefore, it is essential that only moderate pressure be used, and that the knife be carried always at the same angle to the straightedge. The slight roughness which is always found at each corner after the middle of a mount is removed may be easily taken away with the knife, the mount being held flat on a piece of cardboard. When a very deep mount is required, the cutter uses correspondingly stouter boards; it should be remembered, however, that the depth of a mount can be made to appear much greater by simply cutting the bevel wider.

Oval mounts are set out as follows: By means of a straightedge find the middle A (Fig. 126), mark off half the length of the opening required, which is A B; place the T-square on the bottom edge of the

cardboard, and produce the line A C—half the width of the opening. Open the compasses the length of line A B, place one leg at C, and the other, cutting the line D B, will indicate the position where needles should be inserted. To strike the oval line, a piece of cotton is passed over the needles and tied so slack that a pencil pressing outwards and guided round by the cotton will trace the ellipse.

No guide whatever is employed in cutting an oval mount, its uniform bevel depending entirely on the hand and eye of the operator. It is preferable to use a shorter blade in cutting oval mounts than in rectangular ones, especially when the ovals are small but long in shape.

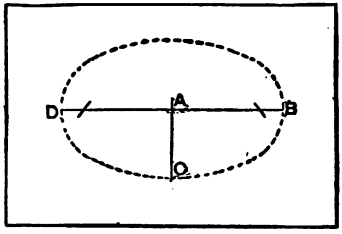


Fig. 126.—Setting Out Oval Mount.

Though length of blade may give freedom in the sweep of a large oval, it is unsuited to small sharp curves; furthermore, a short knife admits of the arm resting nearer the work, and thus checks any tendency to unsteadiness. When the mounting-board is not much thicker than eight-sheet, which is much used, it should be severed with one cut, as it will be almost impossible to pass round a second time without injuring the bevel. It is also necessary to hold the knife precisely at the same angle the whole time that it is traversing the oval. Figs. 127, 128, and 129 represent other shapes of mounts. Those portions where straight lines occur are cut by the aid of the straightedge, but all curves are managed as in cutting ovals.

For binding a mount the best quality gilt paper

may be purchased, ready gummed. Or the paper may be prepared by coating it with a solution of gum arabic, rapidly and evenly applied with a camel-hair brush. To bind a mount, cut a sufficient quantity of the gummed paper into narrow strips and select a piece about $\frac{1}{16}$ in. longer than the length of the side in hand; place it gilt side down on a clean paper, and wet it with weak gum. Hold the mount in a vertical position with the left hand, and take the gilt paper between a finger and the thumb of the right hand and rapidly lay it on. Care must be taken to keep the fingers free from gum, as once this gets upon the gilt surface, it is impossible to remove it without spoiling the gold. In binding oval mounts, it will be found

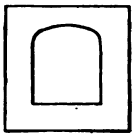


Fig. 127.

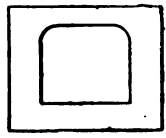


Fig. 128.

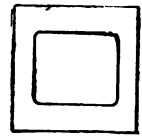


Fig. 129.

Figs. 127, 128, and 129.—Sunk Mounts.

essential to notch that edge of the paper which turns under; the smaller the opening the closer together must the cuts be.

Instead of binding the mounts with gold paper the edges may be gilt with gold leaf, but it is a difficult job for a novice. The work is done as follows:—

Secure the mount in position by any suitable contrivance. A red earthy substance called bole and blacklead are mixed and applied over the edge with a wet sponge, and the edge is then brushed over with a hard brush until it is perfectly dry and shining. The size used is composed of one part of white of egg and seven parts of water. Sufficient gold leaf to fully cover the edge is taken out of the book and carefully laid upon the cushion, blown out straight, and cut with a knife to size; each piece of gold is taken from

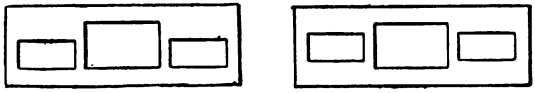
the cushion and laid upon a broad piece of paper which has been previously passed over the hair of the head. Having done this, apply the size to the mounts' edge with a flat camel-hair brush, and while the size is wet take up one of the slips of paper with the gold leaf adhering to it, and carefully transfer the gold to the edge. When almost dry, which will not be very soon, place on the gold edge a piece of smooth, stout paper, and rub over with a burnisher. The edge should now have a dull appearance, and any holes that appear should be made good by cutting small pieces of gold and lifting them from the cushion with a small pad of cotton-wool and breathing on the place to be mended, the gold being afterwards pressed on with the cotton-wool. The edge should be again rubbed down and left to dry, when it should be burnished. The burnisher is held in a convenient position in the hand at an angle of 45° to the mounts' edge, and pressure is applied from the shoulders. These instructions will appear much clearer if read in conjunction with those in Chapter V. on gilding picture frames.

It has become the fashion of late years to place a number of small sketches in one frame rather than to keep them in an album. Figs. 130 and 131 show suitable arrangements of one large and two small landscapes. The latter is the better arrangement, however, because the margin is more evenly balanced. The combination of rectangular and oval or round pictures in the same mount is not a good one; still, it sometimes happens that such a combination is wanted, and Fig. 132 is a suggestion for a suitable arrangement.

Discarded periodicals often contain well-executed prints that may be transformed into superior-looking pictures, without much labour or trouble. The customary method of giving a coat of size and afterwards a coat of mastic or crystal varnish, is very suitable for thick paper bearing a picture upon one side only, such as frontispieces, etc. Use white size at 2d. per lb. instead of the ordinary kind; make it rather thin by

mixing ¾ oz. with a pint of water; apply two or three coats, letting each dry thoroughly before laying on the next. In order to prevent the size from frothing or lathering and entirely spoiling the picture, avoid working the brush more than necessary.

When applying any kind of varnish several thin coats are better than a single thick one, as a thin layer dries quickly, whilst a liberal application will be "tacky" for several days. Draw the brush in one direction only, taking special care not to go over the same portion too frequently. Good quality mastic varnish costs 5s. per pint, and crystal varnish 1s. 6d. per pint. Mastic varnish is preferable to crystal, because it is a better colour, flows more easily, and dries more rapidly, but crystal varnish is much cheaper; the latter



Figs. 130 and 131.—Mounts with Three Openings.

dries more speedily if a teaspoonful of terebene be added to a pint of the varnish, shaking them well together. Pour a small quantity into a suitable jar, and place it in hot water, thus making the varnish flow freely.

Another method has to be adopted when a picture has upon its other side printed matter which, if the paper is thin, may be distinctly seen when the picture is mounted. The paper has to be split in the following simple manner. Give a plentiful coating of glue on both sides of the paper, and place it between two sheets of ordinary white calico; when dry, pull the sheets apart; one side will remain on each piece of calico, and may be removed readily by soaking in hot water. An exceedingly strong glue, suitable for the purpose, is made as follows:—Melt glue in the ordinary manner, putting 1 lb. of glue to every pint of water; turn the hot mass into a large earthenware jar and pour

in a few drops of methylated spirit, and a white curd will appear; stir quickly and continuously till the curds vanish; then add a few more drops of spirit, and proceed as before. Repeat until the mixture gradually assumes a milky appearance. Curds exactly similar to sour milk will now form; still keep on stirring, adding the methylated spirit rather more quickly, and without waiting for the white clots to disperse. Presently the brush will work stiffly as if hindered by a thickening substance, and upon its removal from the mixture a glutinous, slimy mass will adhere. Resume stirring till the liquid is almost clear, and the glue becomes attached to the brush in the shape of a white ball.

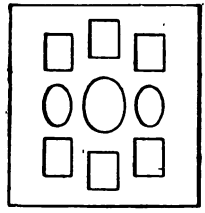


Fig. 132.—Mount for Oval and Oblong Pictures.

Pour away the milky-looking liquid, which is unfit for further use; melt the white substance, and the preparation is ready for use.

Having split the paper satisfactorily, and before soaking in hot water, apply to the back of the required print, which is still clinging face downwards on the calico, a mixture of 1 part Canada balsam and 4 parts spirits of turpentine. Leave about two hours to dry; steep it in hot water until the print floats off, and then dry it thoroughly between blotting-paper. This drying may be hurried forward by removing the print from the sheets of blotting-paper as they become wet and placing it between dry sheets, then passing a warm flat iron over them until the print is perfectly smooth and dry, and quite ready to receive upon the back a coating of

1 part Canada balsam to 2 parts spirits of turpentine. In twenty-four hours give the front a coat of the same mixture, and another when that has thoroughly

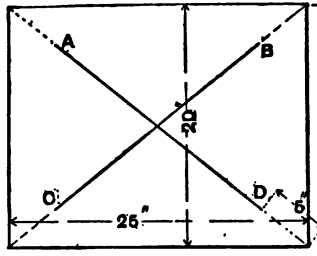


Fig. 133.—Marking Out Mount with Pointed Turnovers.

dried. Then with strong starch paste or gum fix the print upon stout white paper or thin cardboard. The home-made varnish renders the paper transparent, and causes the black printing ink to look bold and effective.

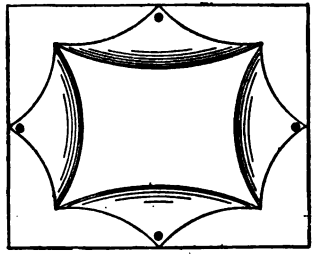


Fig. 134.—Mount with Pointed Turnovers.

Small pictures treated in this way are suited for scrap albums or screens, and larger sizes are well worth framing in the following cheap but effective fashion :— Cover both sides of a sheet of medium thick cardboard, measuring 20 in. by 25 in., with rough brown paper ; paint one side gold, and the other light green. Lay a straightedge from corner to corner upon the

gilded side ; then mark A, B, C, and D, shown in Fig. 133, each 5 in. from their respective corners; join B C and A D, and cut through the cross lines with a sharp knife. Turn the triangular flaps over, as shown in Fig. 134, and

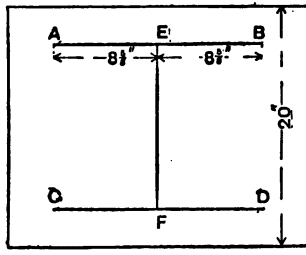


Fig. 135.—Marking Out Mount with Square-cornered Turnovers.

fasten them securely with a large size paper fastener, at each point; dip a camel-hair pencil in liquid gold, and draw it round the exposed raw, white edges of the portion turned over; the pale green blends with the gold background, and forms a neat frame.

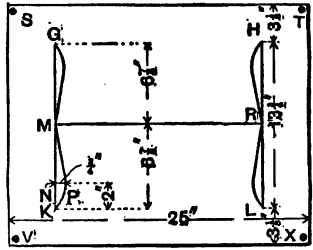


Fig. 136.—Marking Out Mount with Square-cornered Turnovers.

Glue the print in position upon the back, and cover it with brown paper to exclude all dust. Glass is not required, as the varnished surface may safely be wiped with a damp cloth when necessary. Being extremely light, the frames may be suspended by

ribbons, glued to the back. Endless variations of style are possible; the following are suggestions :—

As previously instructed, find points A, B, C, D (see Fig. 135); cut from A to B and from C to D; both these cuts are 17¼ in. Find their centres at E and F, and join them, as shown; cut neatly right through these lines. Take a similar cardboard sheet, and, after marking the

Fig. 137.—Screw-down Paper Fastener.

four corner points, G, H, K, L (Fig. 136), join G K, H L, each of which should measure 13¾ in. Find centres M, R, and join them, then carefully cut through the three lines. A clean, smooth edge is obtained by laying the cardboard on a square of glass, and severing with one firm, steady stroke. Measure from K to N, 2 in., then across from N to P, ¾ in.; draw a curved line from K to M,

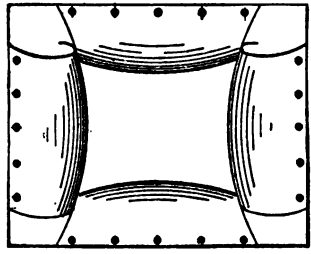


Fig. 138.—Mount with Square-cornered Turnovers.

passing through point P; do exactly the same at each side, as shown in Fig. 136, which must be placed on top of Fig. 135, and the flap E F C A (Fig. 135) slipped through G K (Fig. 136), and E F D B through H L. Fasten the cardboards firmly together with paper fasteners at the corners S, T, V, X (Fig. 136). Fig. 137 represents the strongest and best fastener for the purpose; the upright screw

is pushed through the cards, and the circular nut screwed down tightly.

Now turn the square-cornered flaps, E F C A and E F D B, completely over, making the common edge E F level with the side edges of the united cards. Remove the small curved pieces from the sides of the two under flaps G M R H and K M R L, causing them to fit smoothly around the side portions when they are pulled forward, twisted over, and cautiously adjusted with their edges flush with the top and bottom borders. They should all be securely fixed down with paper fasteners, about four or five on each side, finishing as Fig. 138.

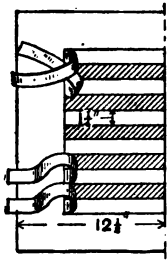


Fig. 139.

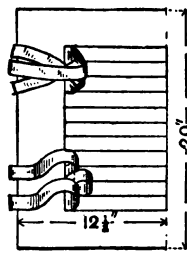


Fig. 140.

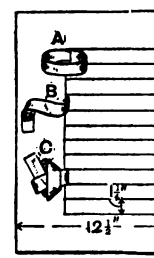


Fig. 141.

Figs. 139 to 141.—Fancy Mounts.

Elaborate and fancy edgings are illustrated in Figs. 139, 140, and 141. Only one side flap is shown in these figures; divide it into eleven equal parts of 1¼ in. Cut away every alternate strip as shown by the shaded parts of Fig. 139; twist the others over symmetrically; for an example, as shown in lower part of Fig. 139; the upper specimen shows two pieces crossed. If all the ¼-in. strips are left intact, reverse the direction of every alternate piece, tucking the end between the two sheets of cardboard (see lower portion of Fig. 140); or cross alternate strips as before mentioned and bring the centre strip over them, as the upper part in Fig. 140. The next diagram gives three pleasing arrangements. Remove alternate strips and form circles with the re-

mainder, as A (Fig. 141), or bend them over and turn the ends sideways underneath, as B; or tie them into knots as at C. The strips may be made wider, if so desired, by dividing the side into five equal parts of 2¾ in. These will be found more difficult to manipulate than the narrower strips. These examples are given merely as suggestions; other designs can easily be invented. Fancy patterns, after the style of fretwork, might be cut out on the undivided turnovers in Fig. 138, thereby giving a more fancy finish.

When keeping unframed prints in a portfolio, much difficulty is often experienced to prevent the edges tearing; it frequently happens, too, that the plate paper, or whatever the print may be on, being unsupported by a stiff foundation, gets much creased in turning over during inspection. It is considered bad taste and, indeed, it is ruinous to "lay down" a valuable print by pasting on cardboard, and, as an alternative, the following simple method is largely adopted: Two four-sheet fine mounting-boards, about 4 in. or 6 in. larger each way than the print, are trimmed square, and out of the centre of one is cut an opening large enough to show the print and any desired amount of its own margin. It is usual to let the cardboard margin come to within from 1 in. to 1½ in. from the print or plate mark. The opening is marked out and squared, as previously described in this chapter, but the cutting differs in that little or no bevel is required. A steel straightedge having the usual bevel may be employed in cutting, but it is advisable to keep the knife well up so that the blade travels nearly at right angles to the mounting-board; a wide bevel in this case is not desirable, because, being unframed, the thin edges of the cardboard are liable to get damaged Now, having placed the print in the centre of the other mounting-board, cut a narrow strip of strong white paper the length of the top edge of picture, paste it, and press down so that one edge of the strip just catches on to the print (A, Fig. 142). Next cut a strip of linen 1½ in. wide, and glue half the width to

the back of the cut-out mount at the top; then, placing the mount in position over the picture, glue down the other edge of the linen to the back of the foundation-board (see Fig. 143), and the job is completed (Fig. 144).

The title and any interesting notes may be written in pencil on the cut-out mount, and the print, though unframed, may be freely handled without damage. The above method of mounting is in no way detrimental to the print, which may be removed from the cardboards at any time and rolled up, or framed. In the cases of large prints, where greater support is required

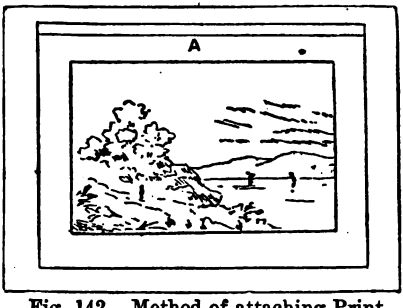


Fig. 142.—Method of attaching Print to Foundation-board.

Fig. 143.—Section of Hinged Cardboards.

in the mount, it will be found advisable to employ six- or eight-sheet boards.

In mounting folding maps on linen, the wrong way is nearly always adopted because it is cheap. It consists in simply pasting the map on linen and folding it up when dry, without taking subsequent wear and tear into account. Maps so mounted crumble away in the folds, and they cannot be folded so as to bring outwards the part in use. By mounting them in the style here described, these objections are avoided, and the map is rendered almost indestructible.

A good material for mounting is white twilled lining, obtainable at any linendraper's. All creases and

wrinkles should be ironed out of it, the necessity of stretching on a frame being thus avoided. The linen should be at least 2 in. larger than the map all round.

Carefully mark out on the back of the map where the folds are to come, and cut it up into squares. The number of the squares will depend upon the size of the map, and the size it is to be when folded. Have as few folds as possible, and if the map is large an even number of squares will be best.

Fix a straightedge at one edge of the linen, and paste a row of squares close to the straightedge, leaving between each square and the next a space of,

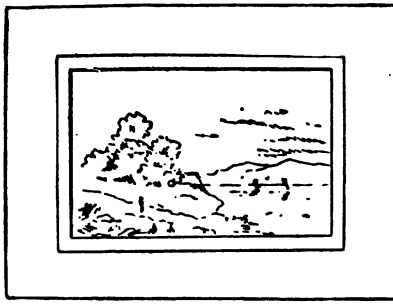


Fig. 144.—Print under Cut-out Mount.

say, ¼ in. A piece of wood ¼ in. wide can be used as a gauge to get the distance equal. Shift the straightedge, and paste on another row of squares, and so on until all are fixed. Great care must be taken to get the squares in line both ways, or the map will not fold.

Dry under slight pressure, trim up the edges, and try which way the map folds easiest. When folded satisfactorily, mark the sides which are outward by labels with name of owner and name of map as a guide to refolding in the same way.

There is no occasion to fill one's pocket with a large map when perhaps only a few square inches of it are wanted. The following method of mounting avoids

this inconvenience:—Cut into squares as before, and paste each one on a piece of thin card or stout drawing paper ⅛ in. larger all round. Number each square consecutively, always commencing at the top left-hand corner of the map. Put the number of each square in the top right-hand corner in, say, Roman numerals, and the name of the map in the other top corner (see Fig. 145). Mark in the middle of each side the number of the square that comes next on that side, and each square will look like the sketch, Fig. 145, which is the second square in the second row of a map divided into twelve

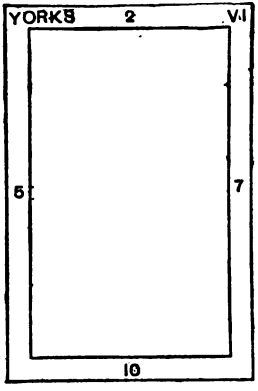


Fig. 145.—Portion of Mounted Travelling Map.

(at least). When a contiguous square is wanted, one correspondingly numbered in Roman figures is sought.

The squares in use are placed in a simple case of card like a book cover, and secured by an elastic band to prevent them dropping out when the case is opened.

Large maps, plans, etc., are sometimes required to be mounted on canvas, then fitted on rollers and varnished, in order that they may be either rolled up for carrying about, or hung on a wall. Backed with canvas, a map will stand considerable wear, and varnish will protect the surface.

A large board, clamped similar to a drawing board, will be the first requisite. On this stretch a piece of canvas, 2 in. larger each way than the outside size of the map. It is not necessary that all the creases should be drawn out of the canvas—a few flat-headed tacks or drawing pins may be placed round the edges, or the edges may be glued to the board. When the canvas is ready, lay a sheet of white paper on a level table, place the map face downwards on it, sponge the back until all the stiffness disappears, and give it a moderately thick coating of paste. The paper on which the map is placed for pasting should, if possible, be free from folds and creases, as these have a tendency to mark the print, more or less. A suitable sheet may generally be purchased at a newspaper printing office; one sheet may be used several times. Remove any lumps which may have accumulated on the pasted map, drop upon it the board, having the canvas attached, and press and rub down from the back. On raising the board the print will be found adhering, though unevenly, to the canvas. A thorough rubbing down on the face, by means of a sheet of thick paper, over which a clean folded duster is pressed, will expel all air and cause the map to present a good, flat surface. Should it be found that air-blisters still remain, prick each one with a fine needle and press them down with a duster.

After mounting, the map should be left to dry and to stretch out on the board; it may then be coated with strong size in order to stop the suction and prevent any discolouring of the paper previous to being varnished. This sizing must be evenly done, as any portion missed will develop into a brown stain on application of the varnish.

When the sizing is dry, thinly coat the print with best paper varnish, using a wide, flat hog-hair brush. Lastly, trim off the superfluous canvas and fit the map with rollers.

Large maps, such as those hung on school walls, are

mostly furnished with wooden rollers, having turned knobs at the ends. For the common quality, the rollers are commonly merely small broomsticks stained and varnished; but large expensive maps are often fitted with solid mahogany or oak rollers polished. For smaller plans, etc., which have to be carried about, a light and durable roller may be made from paper. A double "imperial" sheet of stout brown paper, cut and treated as follows, will make two pairs of rollers:—Cut the sheet in two and again crossways in the middle. Roll the paper over a wooden roller about ½ in. in diameter, and glue in about 2 in. along the edge which goes down last. A firm cylinder will thus be obtained, which only requires covering with dark glazed paper, and fitting with turned knobs at each end.

To fasten a roller to a map, glue the edge of the map about ½ in. on; when the rollers are of heavy, hard wood, drive tin tacks through the canvas at the back as an additional support. Ordinary picture-frame rings may be screwed into the top of wooden rollers for the map to hang by, or a tape may be tacked on the back.

The usual method of mounting large photographic prints (say 15 in. by 20 in.) is as follows:—Having squared the print, turn it face downwards on a clean newspaper and pass a damp sponge over the back; the print will rise and roll up, only, however, to stretch out quite flat a few minutes later on a second application of the sponge. Cover the back evenly with strong starch paste, taking care that the edges are well coated. The edge of the print nearest the operator is now raised by placing a table-knife under it, and removed with finger and thumb of both hands to a large sheet of cardboard, where it is again placed face downwards in such a position as to leave the required margin showing all round. A clean cardboard is now placed level with the far edge of that on which the picture is resting and allowed to drop gently into contact. Having rubbed well over the back of it with both hands, the top card

may be raised, when the photograph will be found adhering; if the rubbing has been thorough no air blisters will be visible, the margin will be found correct, and nothing remains but to place the mounted picture between boards to keep it flat whilst drying.

The mounting of panoramic views is somewhat different, as the sections must be pasted, placed in position, and rubbed down separately, taking great care to get the joins exact, and to press down thoroughly where they butt or overlap as the case may be. The best method is to keep the section well up off the cardboard with the right hand, until the left edge has been placed in position and made to intersect with the picture; it may then be dropped and carefully rubbed down. This process is repeated until the panorama is complete.

The construction of both large and small stretchers is practically the same, there is a slight addition, however, which will be named later on, for the largest sizes. The following instructions do not apply in a strict sense to mounting pictures, but they are included because the picture framer and gilder is often called upon to undertake such work. As is generally known, oil paintings are, as a rule, executed on prepared canvas, which has to be stretched over a wooden frame or "stretcher." The material may be any kind of wood, though pine is generally used for the purpose. Its thickness in the rough, that is, before it is planed smooth, is about 1 in. When planed up, it is seldom more than ¾ in. thick, which is quite enough for small pictures, say, up to 30 in. by 20 in., and even for much larger sizes. The width of each piece may be from about 1 in. to 2½ in. or 3 in. according to the size of the stretcher. The narrowest named, is, however, only suitable for very small stretchers and for ordinary cabinet pictures; 2 in. is generally about the best width for the pine to make stretchers of larger sizes.

Four pieces will be necessary for each stretcher—that is, two for the ends and two for the sides. All

must be cut of the full length required, with the ends properly squared. They are fitted together at the corners with a plain mortise and tenon joint, as shown in Fig. 146. The tenon should be of about one-third the thickness of the stuff. The parts should fit fairly well together, though the accuracy which would be expected in good cabinet work is not essential. It may be desirable to point out that the surfaces of the front—or that portion of the stretcher which is to be

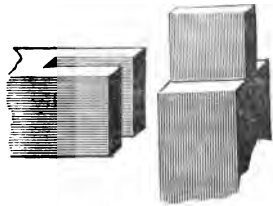


Fig. 146.—Joint for Canvas Stretcher.

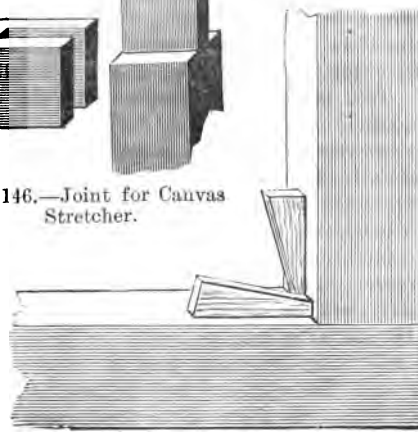


Fig. 147.—Wedges in Canvas Stretcher.

covered with canvas—must be level. The back is not so important, but if there is an inequality at the joints in front, it will make itself evident in the picture.

The stretcher might now be covered with canvas, but the wooden support would then be a frame rather than a stretcher, for no provision has been made for "stretching" the canvas and taking up any slackness which may occur later on. The parts of the stretcher, it must be understood, are always put together without

glue and without any fastening in the way of nails or pegs—so they can be pulled apart at any time till bound over by the canvas. This being so, two wedges inserted in each corner, as in Fig. 147, afford a ready means of forcing the pieces of the frame somewhat apart, and in so doing, of course, tightening or stretching the canvas.

The wedges are usually of some hard wood about ¼ in. thick, and for their reception two spaces must be cut, one slightly prolonging the mortise, and the other alongside the tenon of the piece which fits to it.

After the parts have been put together, the stretcher is ready for covering with the canvas, which should be cut sufficiently large to cover at least the edges of the stretcher; a little extra allowed to lap over the back is desirable. In doing this part of the work a pair of upholsterers' wide-jawed pincers are best, but the ordinary kind may be used instead, or the necessary pulling be done with the fingers even. Whatever is used, care must be taken to get the canvas evenly stretched, and to avoid puckers. Evenness is even more essential at this stage than tightness, though this should be as great as convenient, otherwise when the canvas becomes slack, the wedges may not be sufficient to take up looseness. No specific directions need be given as to the manner of fastening the canvas, but probably the most satisfactory plan will be to fasten each edge down with one tack and then gradually work round. If this be carefully done, there is very slight risk of uneven stretching. The tacks are driven into the edge of the stretcher at intervals of, say, a couple of inches. The corners should be neatly folded over and each fastened with a tack. Any canvas projecting beyond the edge should be either neatly cut away or, better, folded behind and tacked down there. The canvas should now be sufficiently tight to present a flat surface, firm enough to be worked on. If it becomes slack, a tap or two on each wedge will make it tight again. The whole of the work is much more easy, even

to a novice, than it may seem to be from a description. In large stretching frames, to keep the stretcher rigid, there is a centre bar, but this is seldom required.

Canvas is to be had in various widths, and unless discretion is used in cutting it up, there may be much waste. The prepared canvas is sold by the yard, and is obtainable at any good artists' colour shop. "Single primed" canvas costs about 4s. 6d. per yard, 84 in. wide. It may also be suggested that, in the absence of this material, various fabrics of similar substance may be used—coarse calico, holland, etc. Materials are prepared by priming their surfaces with white-lead ground in oil, to which a little picture varnish has been added.

A canvas painting is sometimes fastened on millboard, cardboard, etc.; this is done as follows: Having rubbed the back of the canvas with coarse glasspaper, coat the material with strong glue, rub down thoroughly on the millboard, and press until dry. Failure often occurs through not properly removing the air from between the picture and the millboard. The correct method is to place a square of thick paper over the face of the painting and then expel the air by rubbing, with closed fist, over the whole surface, commencing at the middle and rubbing towards the outside edges. If air gathers under the middle, and it cannot be forced out round the edges on account of the glue having set, prick the blister with a fine needle, and, having let the air escape, rub down well and put a weight on the spot for an hour or two.

When a painting has become thoroughly dry, certain parts of it will be much duller than others, and these parts may be brightened by applying a little raw linseed oil with a hog's-hair brush. If the whole picture is dull and requires varnishing, a thin coat only of varnish may be put on. Both varnish and oil should be bought from an artists' colourman.

The primary object of varnishing an oil painting is to protect it, much in the same way as glass is put over

a water-colour drawing; in fact, valuable or delicately painted oil pictures are often protected by glass, and a lot of future trouble saved. Mastic varnish is used for oil paintings because a thin coat is generally sufficient to bring out all the detail in the dark parts without giving a gloss. It has very little colour, and can be easily removed when necessary, which is not the case when a "durable" varnish, that is, one made from hard gums and drying oil, is used. An oil painting direct from the studio should be carefully hung up to lean forward slightly, so as not to catch any dust, etc., certainly not over a fireplace or near a gas burner. At the end perhaps of about three years the surface dirt, fly spots, etc., should be removed with a clean wet cloth (not flannel) and a coat of varnish applied. This will protect the surface of the picture from future atmospheric influences: in fact, all dirt, etc., will be on the varnish instead of on the picture. Mastic varnish will sometimes "bloom," that is, the picture will be covered with a slight opalescent film. This can be removed by breathing on a small portion at a time and gently rubbing in small circular strokes with a tuft of cotton wadding. Never partially varnish a picture, because even mastic will turn yellow with age, and show an objectionable distinction between the varnished and the unvarnished portions.

Coloured pictures and prints are often greatly improved by varnishing. They should first be coated with parchment size, and then picture copal varnish or mastic varnish may be applied by means of a flat hog-hair brush about 1½ in. wide.

CHAPTER VII.

MAKING PHOTOGRAPH FRAMES.

A PRETTY, though inexpensive, double photo frame can be made from ¾-in. reeded oak moulding, rebated. To commence the frame, cut off two pieces 10¾ in. and two 10¼ in. long, and nail together the lengths as shown in Fig. 148, using a little glue at each joint to steady it, and punching the brads a trifle below

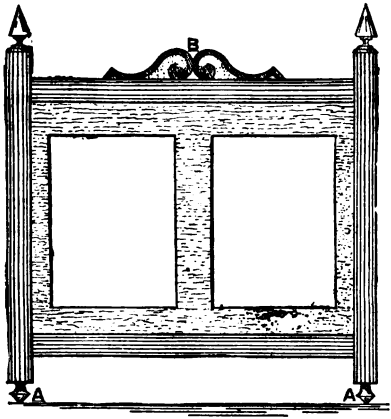


Fig. 148.—Double Photograph Frame.

Fig. 149.—Strut for Frame.

the surface of the moulding. The bottom of the legs may now be cut on the bevel, or more effectively finished by a couple of turned oak buttons (A, Fig. 148). The small spindles, also of oak, are likewise placed in position on the top of the frame, but previous to this the rebate of the sides where they project beyond the top and bottom rail should be blocked by means of a strip of oak carefully glued in and cleaned off.

The brad-holes and any rough tear or split should

now be stopped with putty, made by pouring melted parchment size upon a dry mixture of whiting, ochre, and raw umber. Smooth with fine glasspaper, and the frame proper is complete.

It will be necessary to add a back with strut attached, as this class of frame is intended to stand. A simple strut can be made as follows:—The back having been made of oak, $\frac{3}{16}$ in. thick, proceed to cut a strip of the same material, tapering from about 1 in. at the top (Fig. 149). Bore a small hole through it at A and bevel the top inside. A bit of stout zinc is now cut out, $\frac{1}{4}$ in. wide, and the ends turned up far enough apart to admit the width of the strut between (see Fig. 150). It is then bored and coated with Brunswick black. To put the stand together, pass the rounded ends of the zinc through the cuts made

Fig. 150.

Fig. 151.

Fig. 150.—Hinge for Frame Strut; Fig. 151.—Centre of Frame.

in the back, and place the leg in position between. Put through a piece of wire long enough to project about $\frac{1}{8}$ in., and turn down the ends. When dry, the metal portion should be covered with a second coating of Brunswick black to make a neat finish. The centre ornament (B, Fig. 148) may take the form of a carved scroll or a panel dropped into some more rebated moulding (Fig. 151).

A suitable mount can be made from oak veneer mounting-board. If cut with a short bevel, and the white cardboard edge coloured to match the veneer, it has a very solid appearance.

Fig. 152 shows a frame which will hold eight portraits —three half-plate size, two victorias, and three postage-stamp size; it is hinged together, and can be folded up

if required. The width of each portion is 7 in., and the heights of each, measuring from the outside of the top and bottom rails, are 14 in., 12 in., and 10 in. respectively; the feet are $\frac{5}{8}$ in. longer, and the tops are $2\frac{1}{2}$ in. and $\frac{3}{4}$ in. higher; the rails are $\frac{1}{2}$ in. square, finished size.

The rails are all squared up and gauged to one size; a bead is worked on the outer edges of each, and a rebate $\frac{3}{16}$ in. deep is worked round the inside of each

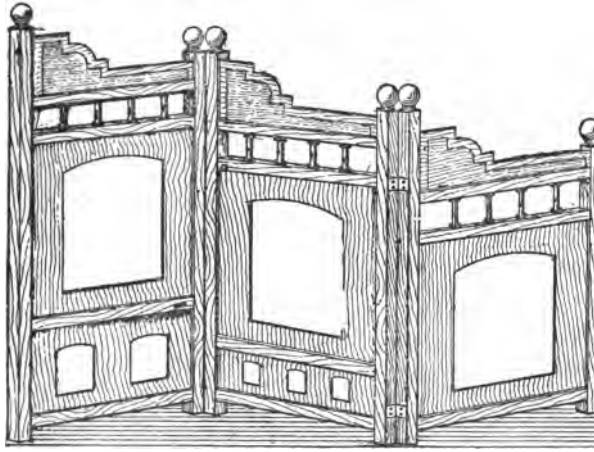


Fig. 152.—Folding Photograph Frame.

frame for the glass. As these rebates do not run through in the vertical rails, they should be made with a cutting gauge and chisel. The vertical rails are mortised, and the cross rails tenoned into them; the mortises are $\frac{5}{8}$ in. deep, and the frames are glued and cramped together. The turned spindles at the top of each frame are 1 in. long, with a $\frac{1}{4}$-in. pin formed at each end, and glued into holes bored in the cross rails as shown. The knobs on the top of each vertical rail have a pin formed on them, and are glued into holes bored in the end of the rails. The pieces of wood above the top rail

are shaped as shown, and may be carved or cut out in fretwork; they are ½ in. thick.

The mounts for the portraits are of cardboard covered with plush, having an opening cut of suitable size, these are fixed in the rebates, and a sheet of thin glass is fixed behind them with pins, or with strips of paper pasted round inside. A sheet of cardboard is then fixed behind the glass with openings cut in it the exact size of the portraits, and outside this is fixed another sheet of cardboard, covered with bookbinder's cloth, which is glued and fastened by its upper edge on the back of the cross rail. A few brass pins may be put in as an additional holdfast, and at the bottom cross rail should be fixed two small brass buttons, which, when turned up, will secure the lower edge of the back. The photographs are placed in the openings cut in the card behind the glass, the pressure of the back keeping them in position. The three frames are joined together as shown in Fig. 152 by brass hinges, which are let in flush, and are so arranged that the three frames can be folded together.

In fixing the plush, thin hot glue is brushed on the card, and the plush gently pressed down. The openings which should be cut straight, must be a little less than the size of the photographs, so that the edges of these are not seen. If the frames are made of hard wood, French polish will make the best finish; and if of pine, three coats of enamel paint, of any colour desired, may be used. In either case the mounts are removed while the polishing or painting is being done. The plush should harmonise with the colour of the frames.

A novel and pretty frame for photographs and engravings may be made from ⅜-in. pitch-pine beading. In design it is a combination of the Oxford frame with the ordinary flat frame.

Cut four pieces of beading each 4 in. longer than each side of the picture to be framed, and put them together as an Oxford frame. Instructions on doing this are

given on pp. 45 to 51. The additional 2 in. at either end, after allowing for ⅜ in. to be cut away for the joint, will give a projection of 1⅝ in., which makes a good effect on a frame.

Drive a ¾-in. brad or small wire nail into the back of each corner, and cover the whole of the back with picture backing, which can be nailed on with ½-in. brads or smaller wire nails. Handy wire nails for this purpose are put up in boxes of assorted sizes, and sold as fret-work nails at about 6d. per box. Into the shallow box which has now been formed, place the photograph with the glass on top.

Now cut four more pieces of beading, each as long as one side of the picture, so that when the ends are mitred they will fit together inside the Oxford frame, with the rounded edge towards the centre. If small pictures, water colours, are to be framed, in order to show as much of the white mount as possible, fit the inner frame with the rounded edge towards the front. This gives the frame a lighter and more graceful appearance. A few ¾-in. wire nails driven through the sides will keep these beads in place, and a couple of screw-eyes or picture-rings will complete the frame. A coat or two of spirit varnish gives the wood a bright gloss.

To make the combined bracket and photo frame illustrated by Fig. 153, very few tools are required, a rule, plane, tenon saw, and a sharp knife being the only requisites. First procure a piece of wood about 2 ft. long, 6 in. wide, and ¾ in. thick, as free from knots as possible; in fact, any part with or near to a knot, will be useless. Pitch pine looks best because the grain is nicely marked, but red pine will also answer, and is much easier to work. Plane both sides smooth, then cut the board into ⅝-in. strips, and plane each strip so that it is about ½ in. thick. Cut four pieces 1 ft. 1½ in. long, then, 1½ in. from each end, cut a groove across as shown in Fig. 154, ⅛ in. deep and ⅜ in. wide. These grooves are for the uprights at the back of the bracket. Cut all the grooves perfectly true, or they will

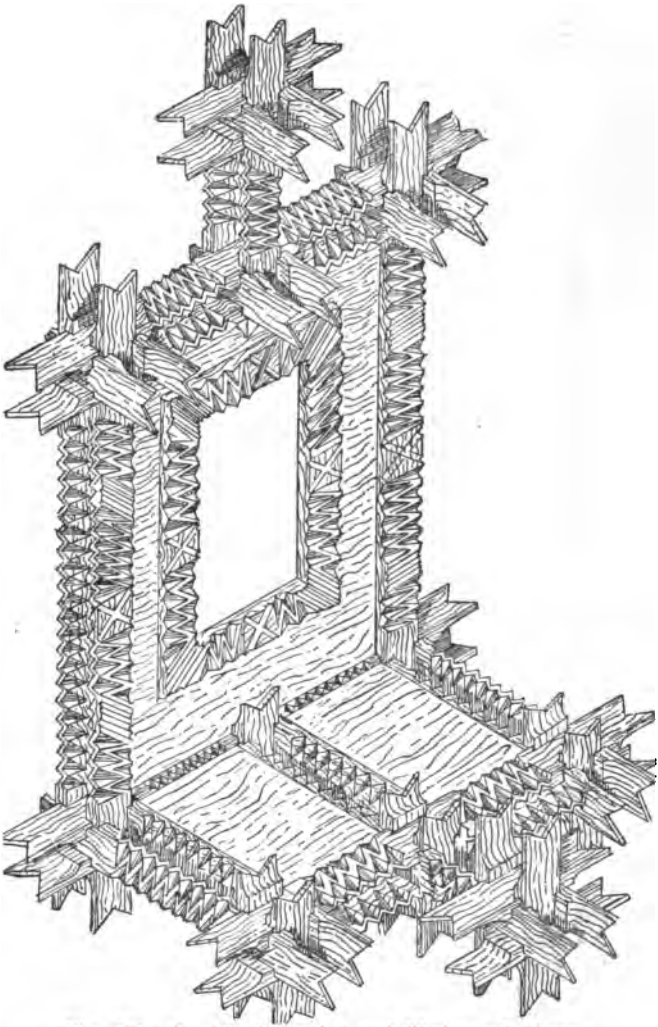


Fig. 153.—Combined Bracket and Photograph Frame.

not fit properly. A view of an upright differently ornamented is given by Fig. 155.

Prepare six other pieces 11½ in. long, and, 1½ in. from each end, cut grooves across them like the others, but, in addition, cut out from the centre another groove (Fig. 156); these are for the cross-pieces at the back and along the front of the bracket.

Next prepare four pieces of wood about 6 in. long,

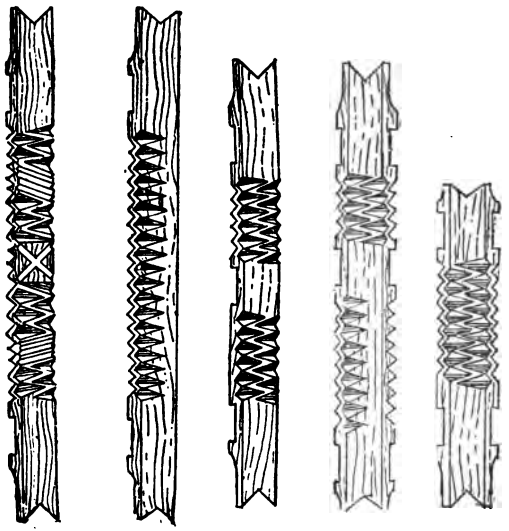


Fig. 154. Fig. 155. Fig. 156. Fig. 157. Fig. 158.

Figs. 154 and 155.—Uprights for Back of Frame; Fig. 156.—Cross-piece; Fig. 157.—Centre and Side Piece; Fig. 158.—Bracket Piece.

cut notches as before, 1½ in. from one end and ½ in. from the other (Fig. 157); two of these fit in the centre on the top and two in a similar manner underneath. Four pieces, 7½ in. long, must be cut as Fig. 157, two for each side of the projecting bracket. Two more lengths, 9¾ in. long, are now required. These have grooves cut across

1½ in. from one end and ½ in. from the other, also near the centre, as shown in Fig. 156. The centre groove must be the same as in Fig. 157. Put the two short ends together, and it will be apparent where to cut out the centre-piece. These two pieces fit in the centre of the bracket and stand out in front of the others.

Eight 4-in. lengths (Fig. 159) must be grooved across exactly in the centre. Four of these are for the cross-pieces in the end of Fig. 158 in front of the bracket, and two each for the top and bottom. Sixteen other pieces like Fig. 159 will be required, but with one short end (½ in.) only, as shown by the dotted line; these act as keys to hold the frame together.

Four pieces shaped as Fig. 160, will be wanted also, two of the opposite hand, 4⅝ in. long, and with the ends cut to an angle of 45°. These form a cross to slip in between the strips of the bracket. A piece is cut out of the centre of each, also two pieces on the top side and two on the under side, so that they will fit flush with each other.

A piece 8¼ in. long, 7¼ in. wide, and ¼ in. thick is required, with a piece cut out of it in the centre, 6¼ in. long and 4½ in. wide. This makes the back, also the mount for the photograph, and will slide in between the uprights of the back. Procure two more strips as in Fig. 163, 6¾ in. long, to fit up the sides of the recess for the photograph, but hanging over ¼ in., and two pieces 5 in. long for the top and bottom; these pieces are either sprigged or glued on.

Proceed to cut the fancy notches, starting with the piece shown in Fig. 154, which is cut only on the front and on one side. Cut one as illustrated, and another of the opposite hand. The other two of the same length are cut as Fig. 155, the notched edge fitting outside. Of the six lengths, cut as Fig. 156, notch four of them as shown, and one each hand of the style shown by Fig. 161. The two pieces as shown in Fig. 158 must, however, be cut in an opposite direction. Notch four pieces as Fig. 157—namely, two 6-in. lengths and two 7½-in. lengths.

The other two of each must be cut as Fig. 162; the two 7½-in. pieces, however, to the opposite hands. Cut four as Fig. 163, four as Fig. 160, and two opposite hand.

See that the knife cuts well, or it will leave ridges in the work; ¼ in. will be a sufficient width for the notches. Do all the notch cutting before starting to fit together.

The bracket will look best if the wood of which it is made is left in its natural colour, but the mount at the

Fig. 159.

Fig. 160.

Fig. 161.

Fig. 162.

Fig. 163.

Fig. 159.—Short Length for Cross-pieces; Fig. 160.—Piece to Form Cross; Fig. 161.—Cross-piece; Fig. 162.—Centre and Side Piece; Fig. 163.—Strip for Recess.

back can be stained or painted darker, excluding, of course, the notched pieces that form the rebate for the photograph.

A double photo frame can be made in the same way as the back of the bracket, with the addition of a central bar with which to divide the frame. For a double frame the four outside pieces should be 8½ in. long, the centre ones 11¼ in., and the cross-pieces 8⅝ in.

One inch will, in this case, be sufficient for the ends to project, also for the projection of the small keys. The two keys that fasten the centre joint in the top cross-piece should go back 1 in. and be left their full thickness, and not bevelled as the other parts; they will then take a piece 7⅛ in. long for a rest at the back.

Cardboard photograph frames may be made from broken cardboard boxes. To construct a small trifold frame, which can be stood upon the table in the form of a screen, or folded up and kept closed, take a sheet of stiff brown paper, 12 in. by 20 in., and mark it out thus: Divide the 12-in. sides into three portions—1½ in. at each edge and 9½ in. in the centre; and divide the 20-in. sides in this manner: 2½ in., 4¾ in., ⅜ in., 4¾ in., ⅜ in., 4¾ in., 2½ in., as shown in Fig. 164. Get three pieces of stout cardboard, each 4¾ in. by 9½ in., and glue them firmly to the brown paper on the spaces exactly corresponding to that size, leaving 1½ in. margin at top and bottom, 2½ in. at each side, and two intermediate spaces of ⅜ in. Spread some glue over the long 1½-in. margins, and turn them down upon the cardboard, then do likewise with the 2½-in. edges. Procure some cheap linen, linenette, or any other similar material; cut a piece 12 in. by 20 in., and brush thin glue evenly over the whole surface. Place the brown paper, with three cards attached, upon the linen, and fold over the edges as previously explained, taking care to smooth down the corners nicely, and not leave unsightly edges; turn the frame completely over and remove wrinkles and other defects by rubbing the palm of the hand over the linen.

The frame now measures 9½ in. by 15 in. Glue a piece of brown paper, 9 in. by 14½ in., inside the case to cover up the cards (there will now be ½-in. linen edge all round), conceal the rough brown paper, and finish with a piece of coloured paper measuring 9 in. by 14½ in. Next obtain a thin piece of cardboard, 4½ in. by 9 in.; cut 3¾ in. by 5½ in. out of the centre, leaving ⅜ in. at each side, 1⅜ in. at top, and 2 in. at the bottom (see Fig 165).

Lay this on a sheet of gilt, silver, or coloured paper, which must be face downwards; draw two diagonal lines from corner to corner of the exposed centre portion; cut through these lines with a sharp knife, making four V-shaped flaps, as shown by dotted lines in Fig. 166. The coloured paper must now be cut slightly

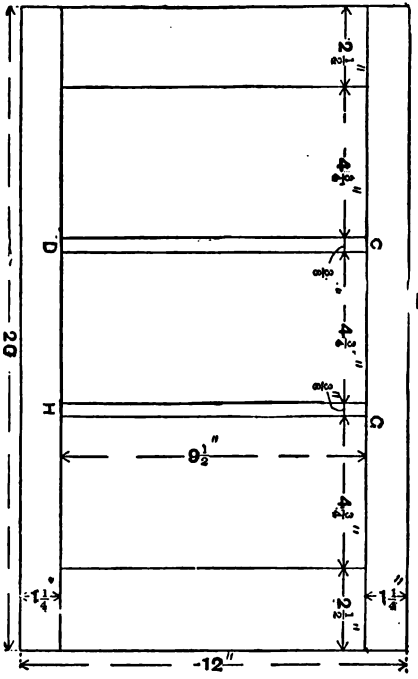


Fig. 164.

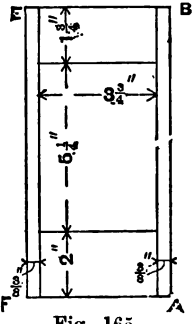


Fig. 165.

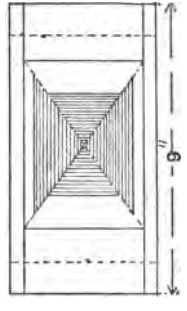


Fig. 166.

Fig. 164.—Plan of Trifold Frame or Screen; Fig. 165.—Cardboard Mount for Trifold Case; Fig. 166.—Mount Ornamented with Coloured Paper.

larger than Fig. 166, to allow for turning over the edges, and, when all is ready, glue the card to the back of the paper, bringing the margins, just mentioned, neatly and

firmly over, and glue them down. Cut away the portion shaded on the four flaps, bend them over, and fasten securely with glue; place it front uppermost and smooth out air-bubbles. Make three of these mounts; then put strong glue on the back of the top and bottom margins, but not more than 1 in. from the edges (see the dotted lines at top and bottom of Fig. 166), and fix them on to the frame in this manner: the first should have the edge A B (Fig. 165) level with the edge C D (Fig. 164), leaving $\frac{1}{4}$ in. margin at top, bottom, and left-hand side; the second must have the edge E F (Fig. 165) exactly flush with G H (Fig. 164), with $\frac{1}{4}$ in. margin at top, bottom, and

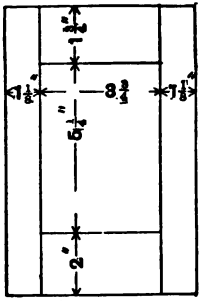


Fig. 167.

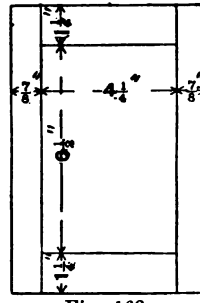


Fig. 168.

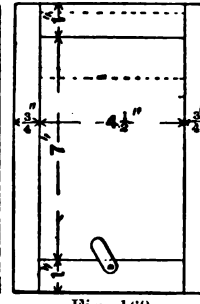


Fig. 169.

Fig. 167.—Front of Cardboard Frame; Fig. 168.—Inside Portion; Fig. 169.—Back.

right-hand side; the third is placed in the centre of the middle compartment, so that $\frac{1}{2}$ in. of coloured background is seen upon each side, and $\frac{1}{4}$ in. of linen at top and bottom.

When thoroughly dry, the frame is ready for the photographs, which are inserted sideways. Scraps may be fixed at the four corners of each mount. An elastic band will prevent the case from falling open when folded up and laid aside.

A strong serviceable frame is made by taking a piece of cardboard 6 in. by 9 in. and cutting in the centre a hole 3¾ in. by 5¼ in., so that 1½ in. remains at each

side, 1¾ in. at the top, and 2 in. at the bottom (see Fig. 167). From the centres of two other pieces of card, 6 in. by 9 in., remove 4¼ in. by 6½ in., leaving ⅞ in. margin at each side and 1¼ in. at top and bottom. From still another piece of the same dimensions, 6 in. by 9 in., carefully remove a centre piece measuring 4½ in. by 7 in.; this will be used later on. There is ¾ in. left

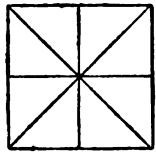
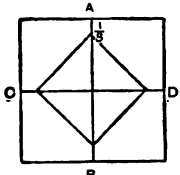


Fig. 170.



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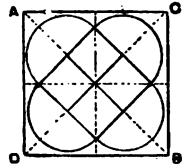

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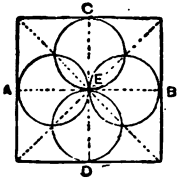

Fig. 173.

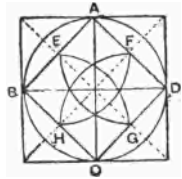

Fig. 174.

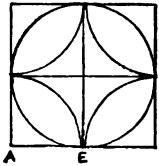

Fig. 175.

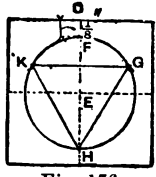

Fig. 176.

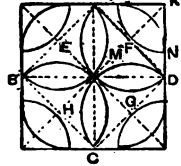

Fig. 177.

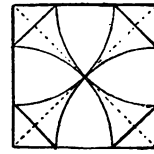

Fig. 178.

Figs. 170 to 178.—Designs for Cardboard Frame Decoration.

at each side, and 1 in. top and bottom, as shown in Fig. 169. Place the frame (Fig. 167) upon a table or any level surface, glue the two cards represented by Fig. 168 on the top of Fig. 167, and that similar to Fig. 169 upon the top of Fig. 168. Be very careful to get all the outside edges to lie evenly one above the other. Take two strips of linen, each 2 in. wide and 9 in. long, and glue them

firmly to the edges lengthways; then take two more strips, 2½ in. wide and 6 in. long, and bind the top and bottom edges. This operation will effectively strengthen the frame, which must now be placed face downwards for the purpose of fitting in a piece of 15-oz. glass 4¼ in. by 6½ in., and fixing the back piece of card, 4½ in. by 7 in., into its proper position; this is facilitated if a cabinet-sized photo card be first placed upon the glass to prevent the back from sinking down whilst a strip of linen, 2 in. by 4½ in., is being glued at the top to form a hinge (see dotted lines, Fig. 169). Then make a fastener at the lower part with a small bit of thick cardboard and a drawing pin, as shown in Fig. 169. Put a narrow piece of black tape through a small ring and glue the ends firmly to the back of the frame near the top if the intention is to hang the finished frame against the wall. The front is still in rough and can be decorated in various ways. Ferns or dried seaweeds pressed between sheets of blotting paper and then artistically arranged look pretty; shells and all kinds of cereals may be judiciously employed.

The following is a good method of decorating frames:—Cover the rough exterior of the frame with a nice smooth piece of card a shade larger all round than Fig. 167; fill it in with the designs given (Figs. 170 to 181), or something similar, either repeating the same pattern or alternating several. Apply different colourings to the various sections according to fancy, and the appearance will be very good. If preferred, cut the squares out separately to imitate fancy tiles.

Another method of finishing the frame is to coat the front with enamel, then take a cardboard front, the exact size of Fig. 167, make the desired pattern with thick lines (see Figs. 182 to 187), cut away the white parts, colour the remainder, and fasten it to the main portion of the frame to form a raised design.

The construction of the designs shown by Figs. 170 to 181 requires a brief description. Fig. 170 is simple enough; for Fig. 171, measure ⅛ in. inwards from A, B, C, D, and

join as shown ; Fig. 172 is the same with half-circles described on the four sides of the inside square, then join A B and C D ; the dotted lines in this and following examples are to be erased. Fig. 173 is made as Fig. 170 ; bisect A E, C E, B E, and D E, use these newly-found points as centres, and describe four circles as shown ; the dotted lines are not essential, though they help to test the geometrical accuracy of the design. For

Fig. 179.

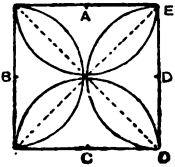

Fig. 180.

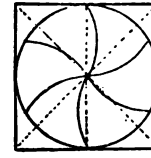

Fig. 181.

Fig. 182.

Fig. 183.

Fig. 184.

Fig. 185.

Fig. 186.

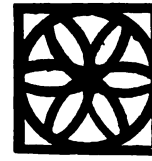

Fig. 187.

Figs. 179 to 187.—Designs for Cardboard Frame Decoration.

Fig. 174, join A B, B C, C D, and D A, after drawing a figure similar to Fig. 170 ; describe a circle from the centre point within the squares, letting the circumference touch A, B, C, and D ; also form four arcs from centres E, F, G, H, with a radius equal to E F, F G, G H, or H E. Fig. 175 is as Fig. 170 without diagonals ; make four arcs, using the corners as centres, each radius being

equal to A E, then describe the large circle as in the previous example. For Fig. 176, find point F ⅛ in. from D, describe a circle from centre E with distance E F, trisect the circle G H K, and join G H, H K, and K G. For Fig. 177, form the outer and inner squares, as Fig. 174; from centres E, F, G, H, describe four semicircles as shown, the extent of each radius being equal to F A. In this example it would be as well to make all radii slightly less than mentioned, so that circles and lines do not come in contact. Use each corner as a centre, and form four arcs, the radius in each case being somewhat less than K F; keep the same distance; rest one leg of the compasses on L, and find M on F H; use M as a centre, and draw an arc from L to N; do the same at each corner. In Fig 178, the corners are again used as centres, and the four arcs are allowed to intersect exactly in the centre of the square; join E F, and the corresponding points at the other corners. For Fig. 179, describe the large circle within the square; divide the circumference into six equal parts; do not shift the compasses, as each part will be equal to the radius; then fashion a six-leaved figure as shown, filled in. Fig. 180 is made by drawing from centres A, B, C, D, with distance a shade less than A E, four semicircles almost touching the centre of the square each time; Fig. 181 is similar to Fig. 179, but the arcs should terminate at the centre instead of travelling from one part of the circumference to another.

Although all dimensions given relate to cabinet-sized photos, smaller frames for cartes may be constructed on the same principle. A neat and appropriate stand suitable for cartes is made thus: construct two frames according to Figs. 167 and 168, measuring 4 in. by 6 in. round the outside edges, 2 in. by 3 in. inside, making the openings in the backs (as Fig. 168) slightly larger; put in the glass and photographs, which cannot be removed, and glue one on each side of a piece of cardboard measuring 6 in. by 4½ in., letting ½ in. protrude at one side. Construct four of these double

frames. Get a piece of wood 6 in. long and 1½ by 1½ in.; on each side cut a slit ½ in. deep and the whole length of the wood; insert the cardboard projections, gluing

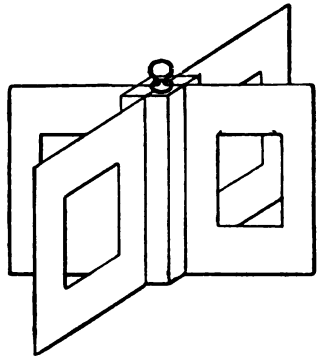

Fig. 188.—Stand for Eight Cartes.

them firmly in, and add a fancy knob and a coat of enamel to complete the stand, shown in Fig. 188. If smaller centre pieces are removed from Fig. 167, either

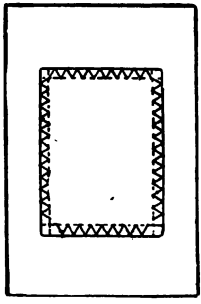

Fig. 189.

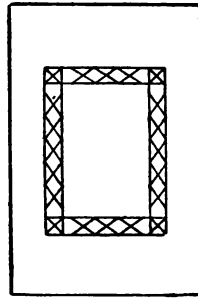

Fig. 190.

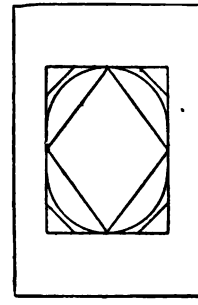

Fig. 191.

Figs. 189 to 191.—Ornamentation of Inside Edges of Cardboard Frame.

for cabinet or carte, the inside edges may be notched as Fig. 189, or lattice work formed as Fig. 190. There

are many different shaped centres shown in Fig. 191—these may be intermixed at pleasure; for instance, the oval top can have a square base, the upper part of the diamond may rest upon the lower half of an octagon, etc. etc.

A tasty frame for cartes is constructed by cutting out two cardboard circles, each 6-in. diameter, and from the centre remove oblongs 2 in. by 3 in. From the centres of four similar circles take out pieces 3-in. by 4-in. to contain the glass and photographs; then get a rather stiff piece of card the shape of Fig. 192 to form a

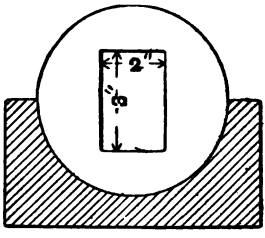

Fig. 192.—Circular Frame for Two Photographs.

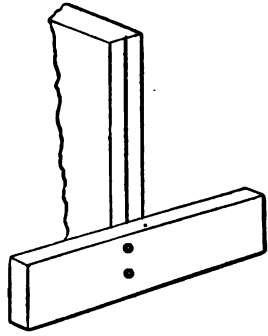

Fig. 193.—Feet of Frame.

back for the other parts; put them together as explained when dealing with Fig. 188; the shaded portion of Fig. 192 must be sandwiched between two similar shaped pieces of ¼-in. wood of any kind. A keyhole saw will cut out the half circles properly. Then at each end place a cross-piece about 4½ in. long, 1 in. wide, and ½ in. thick to act as feet and prevent the ornament from toppling over (see Fig. 193). The cardboard fronts and the stand admit of great variety of decoration.

CHAPTER VIII.

FRAMES COVERED WITH PLUSH AND CORK.

To make an ordinary frame for a picture as described in Chapter I. is by no means a difficult matter, though great neatness is required at the mitred joints.

The unsightliness of a badly-made joint may, however, be hidden by covering it with some textile fabric such as plush. The most suitable plush is the ordinary silk velvet, sold by drapers and upholsterers. As the velvet is rather expensive, care should be taken to cut it with the least possible waste. Occasionally remnants can be purchased at a price very much lower than when cut from the piece specially, and, if not too small, do just as well. The coarser velvets—such as mohair—are not suitable for small frames.

The wood-work of the frame being hidden, no time need be wasted in carefully finishing it. Plain beads or flats do very well, and any little roughness hardly matters, not being visible under the plush. It is not necessary to smooth the mouldings with glasspaper; they can be covered just as they are received. Mouldings should be selected which will look best when finished. A moulding formed of a number of small members looks richer while uncovered than, say, an ogee or a plain bold moulding, but the small details in which its beauty consists are hidden by the velvet. It therefore follows that a plain moulding looks equally as well as a more elaborate one.

As plush is a delicate material, care must be taken, when handling it, not to get the surface matted or injured with glue or paste, which is difficult, if not impossible, to remove.

The glue should, in all cases, be applied to the wood,

and not to the velvet. Good ordinary glue can be used, though a mixture of flour-paste and glue is preferred by some. Any strong adhesive which is not too moist and does not set so rapidly as to prevent the velvet being laid properly, may be used, but good plain glue prepared in the usual way, and applied, while hot, thinly and evenly to the wood, is as good as anything for the purpose.

Great pressure, which would squeeze the glue through the woven backing of the plush, is not necessary to cause the plush to adhere. A light gentle pressure is all that is required, though the velvet may require a little humouring with a paper knife or similar article to get it to fit into angles. Of course, the pile will be somewhat flattened by this treatment, but, unless the glue has been forced through, it can easily be restored by brushing lightly with a soft brush.

At the mitres and outer corners of the frame, special care is necessary in folding the plush over the edges. To avoid having a vacant, uncovered portion of the wood, or a wrinkle in the velvet, cut the material as far as the front surface of the frame, and also cut away as much as may be necessary to allow a neat join being effected.

On the inner edges of the frame, if they are thin, no difficulty will arise, as, after cutting the velvet up to the mitre, it easily folds over on the back, when, of course, it can be glued. The outer edges should also be covered, and the plush be secured behind in the same way.

So far it has been assumed that the frame has been covered with a single piece of velvet, from which a portion has been cut from the centre to correspond with the frame opening. This method would, however, involve a great waste of plush when making large frames. Large frames are therefore covered by cutting the plush into strips of sufficient width to cover the front of the moulding, and to leave enough margin to turn over and secure behind. One strip will, of course, be used

for each side, top, and bottom of the frame, for a join anywhere, except at the corners, detracts from the appearance.

At the corners the velvet must be cut to correspond with the mitres, and, if this be neatly done, the join will hardly be more perceptible and not more unsightly than a properly made joint in the wood.

Bad joints may be covered with fancy cord, such as is used by upholsterers for trimming purposes. Or a plush band may be used with its ends fastened behind, and if the moulding is a plain one, it is merely carried over the joint. If the moulding is a large one, and has any decided hollows, there will be a little more difficulty, but not much. The cord will adhere if touched here and there with a little strong glue; if this is not sufficient, a few gimp pins may be driven through it into the wood, the small heads of the gimp pins being concealed by a strand of the cord.

Very handsome frames may also be made by the judicious use of plush in a more elaborate style than that which has been referred to. A wide flat frame of the simplest kind could be covered with velvet, and would look well, but it would be improved by a narrow piece of half-round moulding, covered with velvet of another colour, and glued down on the flat; this is a suggestion that can be worked out to an almost unlimited extent.

Starting again with the flat, another piece covered with velvet can be fastened to the outer edge, an inner flat can be made to fit within the other, and so on.

Another very simple means of decorating velvet-covered frames is to drive in plain brass or copper studs close together in straight lines, or arranged so as to form simple patterns—such as diamonds, circles, etc.

Plaque frames often require to be covered with plush, and to do so the following method should be adopted: Take a circular piece of plush, 1½ in. to 2 in. larger in diameter than the frame; all round the edges make cuts

to the depth of plush that will overlap the frame; lay the plush right side down on the table without creasing it; apply thin hot glue, which, however, must not be watery, round the front of the frame; then lay the frame on the plush, and strain it tight by pulling with the hands. Then by different stages apply the glue at the back and overlap the overhanging plush, taking three or four inches at a time (see A, Fig. 194). Press the plush into contact with the wood with a bone paper-knife or piece of wood. When completed and nicely set, draw a circle with tailor's chalk on the plush in the centre, then cut it out with scissors; leave a margin of 1 in. or ¾ in., so as to overlap on to the rebate of frame. As a guide

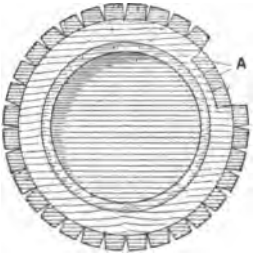

Fig. 194.

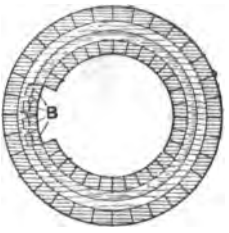

Fig. 195.

Figs. 194 and 195.—Covering Plaque Frames with Plush.

in getting the original circle, a dinner-plate may be used. After cutting out the circle with scissors, make cuts all round the inner edge to the required depth. Great care should be exercised not to cut too far, but just enough to overlap and fit neatly (see B, Fig. 195). Press the plush well into the rebate, taking a little at a time.

For decorative purposes, gold lines are sometimes put on the velvet. Such work is hardly within the province of this handbook, but a knowledge of the processes may be gathered from the following brief directions. In preparing velvet for gilding, it must not be damped in any way, and the glaire used for leather and cloth would stain it if worked over the surface.

There are at least three materials used for making the gold adhere—dried white of egg, gum sandrac, and resin; all of these are powdered. Either of these can be used, but the gum is the best; it should be reduced very fine and placed in a bottle with a piece of fine muslin tied over it; by this means it can be dusted over the part to be gilded. When the powder has been applied, the gold leaf is cut to required size, and lifted on the heated roll or stamp. The design is then firmly impressed and the superfluous gold wiped off. When the design is large, it is usual to work it out on paper, and lay it upon the velvet, impress it through, and afterwards go over the design to glaire it with a camel-hair pencil; and, when dry, lay on the gold, re-impress the tools, and, when finished, rub off the superfluous gold with a clean rag. As to exactness and regularity, it is best to become accustomed to obtaining this without any special tools or appliances. When the gum powder has been dusted on, draw a line, by means of the straightedge and a pencil point, and work to the line so drawn. Slight division marks might be made the same way. Lines and marks might be made with chalk, but great care must be exercised, as velvet is easily stained.

Enough has been said to enable a person to make plush-covered frames of all shapes, so frames ornamented with cork will now be considered. The material generally used for making cork frames is too well known to need much comment. If the work has to be done upon the most economical lines, bottle corks that have already served their primary purpose may be used, but new cork will not be found costly. That having a close, firm grain should be chosen. Of bottle corks, those sold as "wine corks" are the best. Cork is to be bought in sheets of regular thickness, and, if elaborate work is engaged in, these trimmed sheets may be found useful.

The only tool used in cork cutting is the knife, which should be thin and exceedingly sharp. To make a good clean cut, it should be used with a drawing motion

somewhat as a razor in shaving, and not merely with a direct downward action.

In the designs given it will be seen that most of the

Fig. 197.—Section on Line A B.

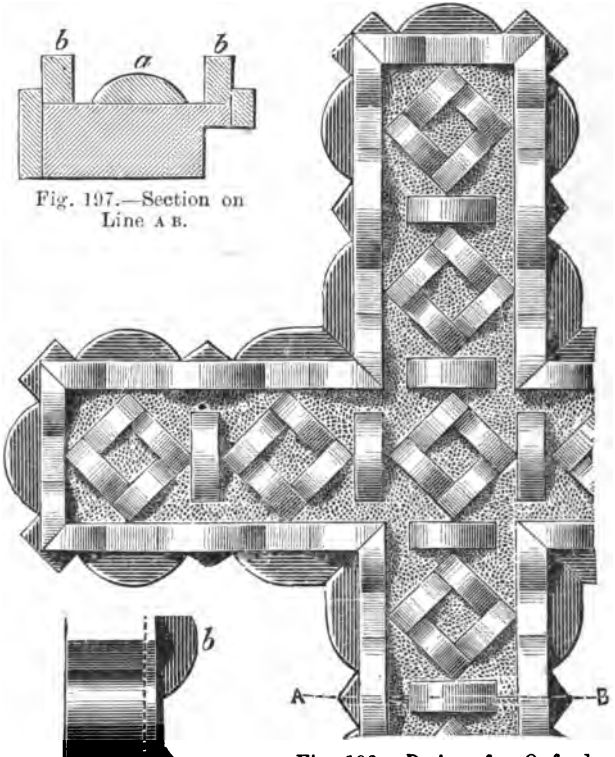

Fig. 196.—Design for Oxford Frame in Cork.

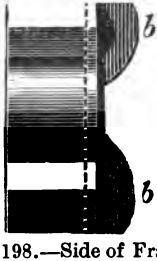

Fig. 198.—Side of Frame.

pieces employed in forming the patterns are made by cutting the ordinary bottle cork into transverse sections.

All the pieces in each given pattern should be of equal thickness. Practice will soon enable them to be cut with regularity, but, till that knack has been acquired, it will be well to have a gauge, made of sheet metal, with which to test them before using—all that do not agree with it being laid aside for other purposes.

The wooden frame foundation is generally made of deal, and, as it is not much seen in the finished article, no great neatness is necessary. There are various ways of dealing with those parts of the foundation not hidden by the cork, as will be explained. Instead of deal, the foundation may be made of some wood which, like teak or cedar, matches the cork in colour, and may be left as it is.

The pattern being arranged, the pieces of cork have simply to be attached to the foundation by moderately thin, but strong, glue. As a finish, a couple of coats of coachmakers' body varnish are given.

An Oxford form of cork frame is shown by Fig. 196. In the section (Fig. 197), the form of the slices of cork which make the ornaments of its centre may be seen at A. The alternate pieces of the projecting border, B B (Figs. 197 and 198), are much the same, but a trifle larger. The sides of this frame are entirely covered and hidden by the cork, which is also glued to the lower parts of the pieces which form the projecting border.

In Fig. 199 the projecting ornament is simplicity itself. The pieces forming it are all similar to A (Fig. 197), which are glued, semicircle upwards, to the face of the flat frame. In this design the border is not formed, as in the last, by pieces glued to the sides, but by thin pieces glued to the face of the foundation, as illustrated in the section (Fig. 200). Fig. 201 is an alternative corner for this frame. A square of cork, from $\frac{1}{16}$ in. to $\frac{1}{8}$ in. thick, should first be glued over the corner, and the flower built up upon it, so that a little more projection may be gained than in the other work.

The frame shown in Fig. 202 is, owing to the sloping

form of the border, rather more difficult, but with a card gauge of the exact angle the pieces may be cut accurately. Fig. 203 is a section on the line E F.

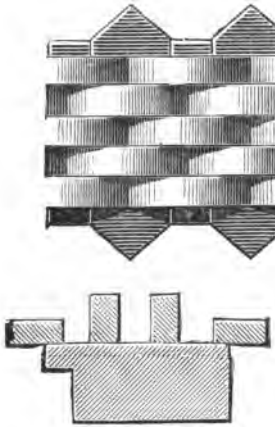

Fig. 200.

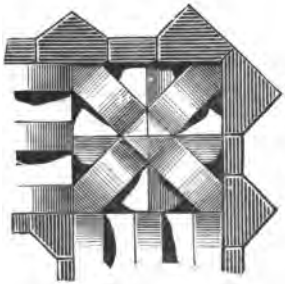

Fig. 201.

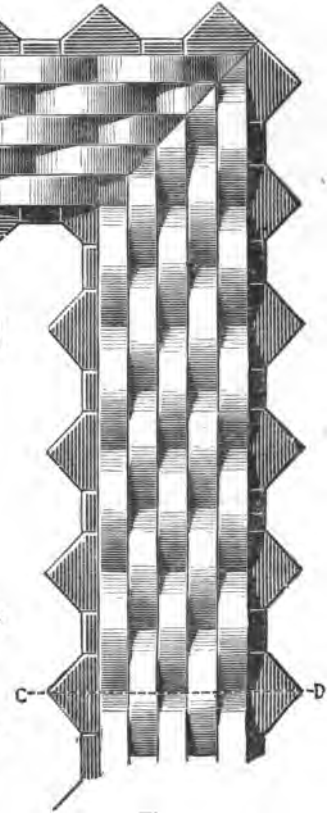

Fig. 199.

Fig. 199.—Design for Cork Frame; Fig. 200.—Section on Line C D; Fig. 201.—Alternate Design for Corner of Frame.

The roughened ground, shown in most of the accompanying designs, is obtained by rubbing up scraps of

cork as fine as sand, and sprinkling this on the wood, which has been coated with glue. In superior cork-work the ground is sometimes completely veneered over with sheet-cork. Supposing, however, that the colour of the wood of the frame matches that of the cork the

Fig. 203.—Section on Line E F.

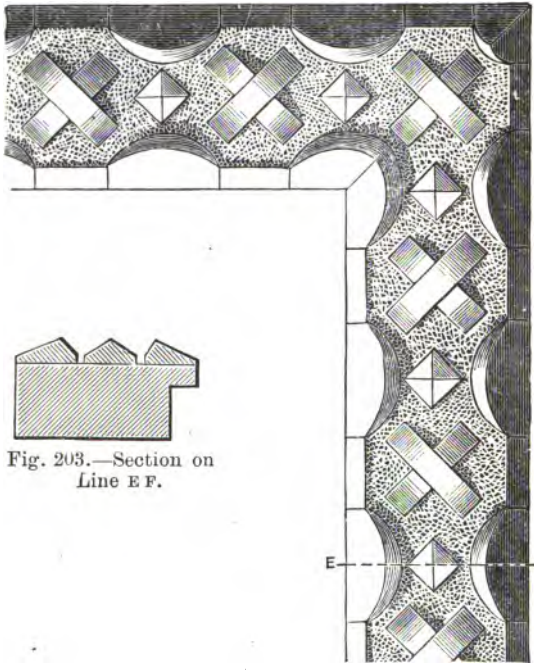

Fig. 202.

Fig. 202.—Design for Cork Frame.

ground will look well left quite plain; or a grounding-punch can be used on it, as in wood carvings.

In Fig. 204 the more prominent decorations on the frame shown are half balls of cork; should the novice find a difficulty in cutting them properly, discs may

be substituted instead—that is, mere sections cut from bottle corks. All the pieces in the two projecting borders end in triangular points; of these the dotted lines in the section (Fig. 205) show the greatest projection, the line G H, through which this section is cut,

Fig. 205.—Section on Line G H.

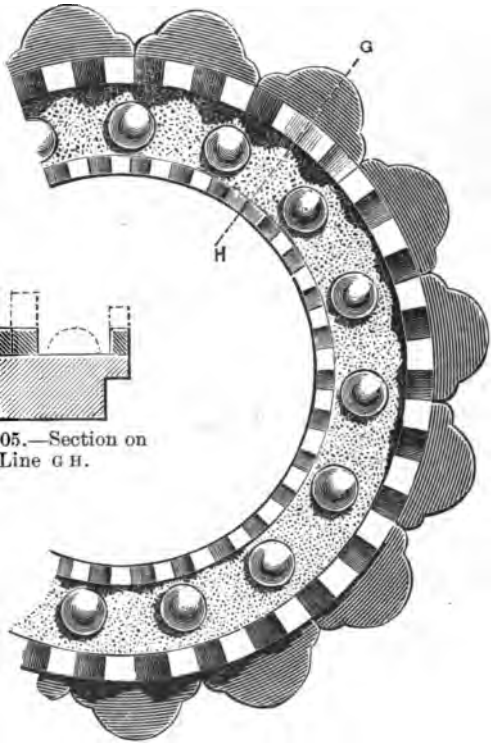

Fig. 204.—Design for Cork Frame.

being at their least projection ; the position of the line of balls is also indicated by dots. The flat outer border is glued to the face of the frame, leaving the sides uncovered.

In Fig. 206 a different plan is followed, the sides being covered by rectangular pieces of cork, alternately thick and thin, and these project beyond the face of the frame, so as to form a border to the pattern. No difficulty will be found in cutting the different pieces used in the flowers; they all slope downwards from

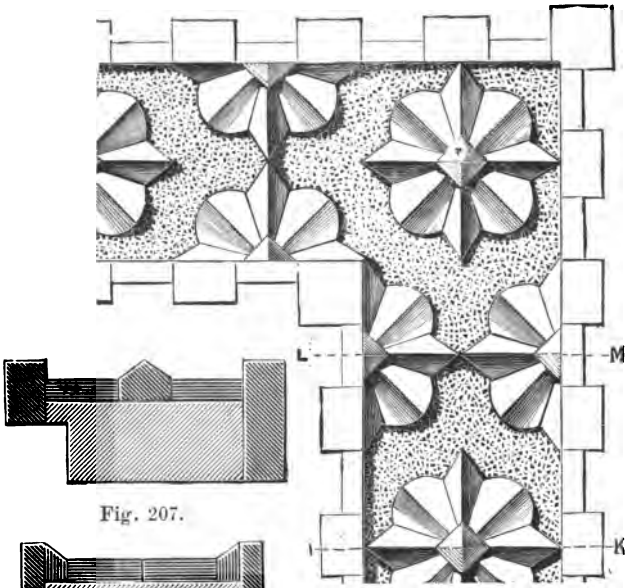

Fig. 206.

Fig. 207.

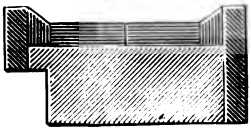

Fig. 208.

Fig. 206.—Design for Cork Frame; Fig. 207.—Section on Line I K; Fig. 208.—Section on Line L M.

the central line. This pattern can well be employed where surfaces broader than most picture frames have to be decorated with cork-work. Sections of this frame are shown by Figs. 207 and 208.

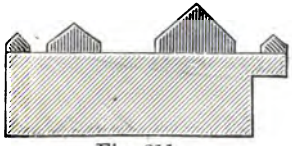

Fig. 211.

Fig. 210.

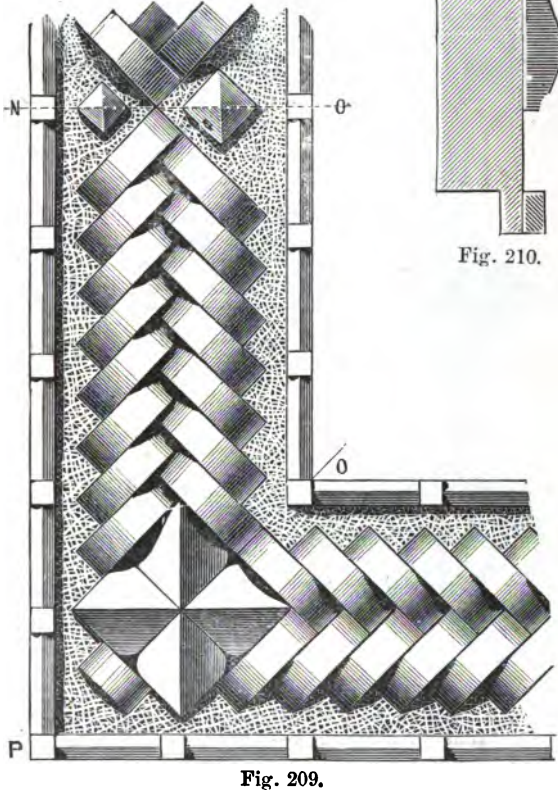

Fig. 209.

Fig. 209.—Design for Cork Frame ; Fig. 210.—Section on Line P Q ; Fig. 211.—Section on Line N O.

In Fig. 209 the plait pattern is wholly formed of pieces like those at A, Fig. 197. The flower at the corner is in four pieces, which should be cut thicker, as to be

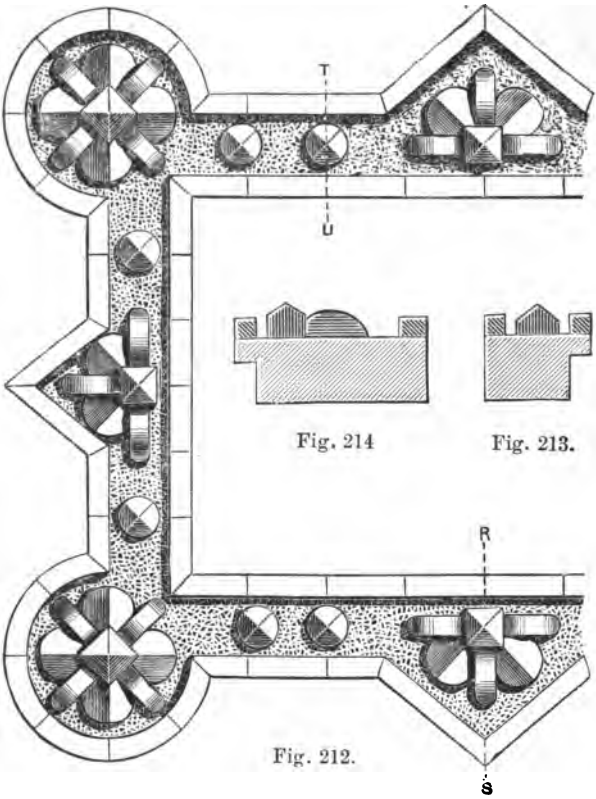

Fig. 214 Fig. 213.

Fig. 212.

Fig. 212.—Design for Cork Frame; Fig. 213.—Section on Line T U; Fig. 214.—Section on Line R S.

a trifle more prominent than the plait. This is shown in the section, Fig. 210. Fig. 211 is another section. The border, which lies on the face of the frame, is of

small cubes, alternating with longer pieces cut to a ridge on the projecting side.

The design, Fig. 212, is not one intended to be carried out on any large scale. Its success will much depend on the worker's ability to cut out the foundation frame neatly with the bow-saw. The round ornaments in this frame are not half spheres, as in Fig. 214, but may be sections of small phial corks, the projecting ends of which have been cut to a pyramidal form, as is shown in the section, Fig. 213. The section, Fig. 214, shows the projection of the parts of the incomplete flower at R S, and sufficiently explains the construction of the complete flowers in the corners.

CHAPTER IX.

HANGING AND PACKING PICTURES.

DRY walls are essential to the preservation of pictures, but contact with the wall may be prevented by screwing the metal eyes or rings a few inches down the sides of the frame at the back, thereby giving the picture, when hung, a sloping position towards the spectator (see Fig. 215), and by gluing cork or leather pads or washers at the bottom corners. This also allows the air to circulate freely round the back of the frame. Oil paintings should not be hung where they are exposed to the full glare of a hot sun, or they may be cracked and blistered. A glazed picture should not be hung immediately opposite a window, as the strong light, falling directly upon it, causes objects in front to be reflected in the glass, to the obliteration of the picture; at the same time, a good light is necessary both for preserving and seeing pictures.

There are various methods of hanging pictures, the most common employing the ordinary brass-headed nail and cord, but an improvement on this is the picture nail and wire or cord. The ordinary picture nail is shown in Fig. 216; these nails are provided with adjustable ornamental heads in metal of various designs; many have centres of either glass or china, or both; the head has a screw-thread sunk in the centre at the back, and a corresponding thread is worked on the thick end of the nail or spike. Before driving, this head is unscrewed, and care must be taken that the thread on the spike is not injured when using the hammer. When driven firm, the head can be screwed on again.

Another kind of picture nail that is sometimes used somewhat resembles a sleeve-link in its action; a

tube at the back of the head slides over the end of the nail, and a snap arrangement joins the two together.

When a picture is to be suspended from one of these nails, a joint in the brickwork should be found at the proposed position by means of a long, thin bradawl; this reduces injury to the plaster to a minimum.

If a suitable joint cannot be found, drill a small hole in the brickwork and insert a small wooden plug, and drive the nail into this plug.

If the picture is heavy, the strain on the cord may be relieved by a nail driven in the centre at the bottom of the frame. Fig. 215 gives a back and side elevation

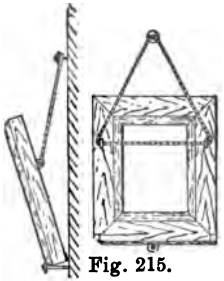

Fig. 215.

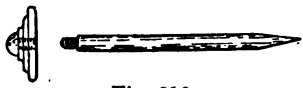

Fig. 216.

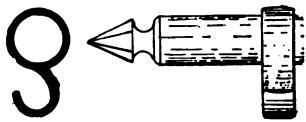

Fig. 217.

Fig 215.—Suspended Picture Frame; Fig. 216.—Picture Nail; Fig. 217.—Picture Hook and Rod.

of a picture so hung. Linen cord is preferable to worsted-covered cord, as the latter is not as strong, and is liable to fray and look unsightly. The knot should not be tied to the rings, but between them; it is then concealed behind the frame when the picture is hung. The advantage of screwing the rings or eyes that support a weighty frame some distance down each side at the back is obvious: if screwed into the top portion of the mould, the top mitres have to bear the whole weight and are liable to give, whereas by the method advocated the weight is thrown on to the rings.

A more elaborate method of hanging pictures is

by means of rods and hooks (see Figs. 217, 218, and 219). These rods are generally metal tubes supported by brackets about every 2 ft. all round the room; they are generally fixed just below the ceiling cornice, and at each angle finish with a knob or spike. On these rods the hooks are threaded previous to screwing on one of the ends, and over these hooks the cord, wire, or chain of the picture passes. The terminal knobs or spikes are secured to the ends of the rods by means of an iron screw projecting from the centre of the neck; this engages in tapped holes formed in or attached to the ends of the tubes; or the ends of the rods are plugged with wood, and the terminals screwed into these. Sometimes the screw-threaded pin is attached to the ends of the tube, and the terminal

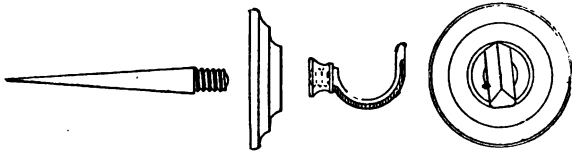

Fig. 218. Fig. 219.

Figs. 218 and 219.—Details of Bracket.

knobs are screwed on these like the finial knobs on an iron bedstead. Sometimes a projecting member of a ceiling cornice is used to suspend pictures from. In public galleries pliable vertical metal strips are often used; these are screwed to the bottom of the frame at the back, and are laced through horizontal strips across the back. Holes in the top of the vertical strips pass over the nails, or are hooked so as to clip horizontal iron fillets fastened to the wall. A moulded false cornice—termed a picture rail—with projecting bead, is frequently made use of, as shown at Fig. 220, which represents a section and elevation of picture rail and hook. The hook in this case is S-shaped or is a double hook of cast metal; the upper curve is larger than the lower one, to enable it to fit on the rail.

Suitable dimensions of moulding for ordinary sized rooms are 1½ in. by 1 in. It can be had in plain wood, for painting after fixing, or already tinted with enamel or gilt. These latter kinds have the advantage of being finished as soon as fixed, but they require far more

Fig. 220.—Hook and Moulding.

careful work when fixing, as the surface chips very easily.

Before commencing to fix a picture rail, the depth of the frieze (if the room has to be papered) must be ascertained; or, if the room is already papered, the moulding must be kept a suitable distance from the ceiling to allow of a frieze or border being added, if wanted, in the future. For a room with a cornice round it, from 6 in. to 9 in. will be about right; otherwise 10 in. or 12 in. will not be too deep for rooms from 8 ft. to 10 ft. high. Having decided on the position of the moulding, near each corner of the room on one of the longer sides drive in a nail, and stretch a line tightly

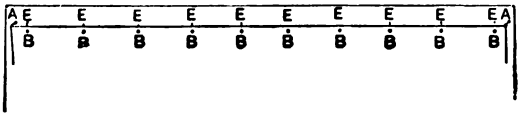

Fig. 221.—Side of Room plugged for Moulding.

from nail to nail, so that the line shows the position of the top of the moulding, and proceed to drill holes for plugs about 1 in. below the line, at intervals of about 18 in., the end holes being about a foot from the corners. Fig. 221 shows the side of the room with the holes drilled, A being the two nails holding the line, and B

the plug holes. The holes are made an inch below the line; the most suitable part of the moulding through which to drive the nails is the square part.

The plug holes must be carefully made. A suitable drill for the job is made of steel to the shape shown in Fig. 222, the stem being ½ in. in diameter, and the point

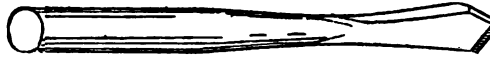

Fig. 222.—Drill for Making Holes for Plugs.

⅝ in. wide by $\frac{3}{16}$ in. thick. This drill is used by striking it smartly with the hammer, turning it slightly between the strokes; by its use holes can be made in the bricks in less time than it would take to find a joint. Each hole should be drilled to a depth of about 2 in., so that the plugs have a solid hold in the bricks of 1½ in.

The plugs should be square and slightly tapered, as shown in Fig. 223. If the wood is cut off to 2 in. in length, and split into squares of barely ⅝ in., they can be easily and quickly finished by taking off a thin chip

Fig. 223.

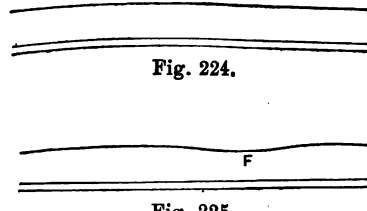

Fig. 224.

Fig. 225.

Fig. 223.—Plug for Walls; Figs. 224 and 225.—Exaggerated Curves of Ceilings.

from each side with a chisel. Round plugs made with a dowel plate do not hold so well. Drive one plug into each hole, cutting off any part that projects beyond the surface of the wall, and over the centre of each plug make a pencil mark, as shown at E (Fig. 221). The same procedure can be followed at each of the four sides of the room, all the plugs being put in before any

moulding is fixed. When drilling the holes for plugs, notice if the ceiling or cornice is straight or otherwise; if straight, follow the line as near as possible, but if not, some allowance must be made. The ceiling may be as shown in Fig. 224, round or hollow from corner to corner; in this case, the moulding should be made to follow the curve to a certain extent, taking care not to overdo it, and the plugs must be put in accordingly. On the other hand, the ceiling may have a series of curves, as shown in Fig. 225; in such a case, take the measurements from the lowest points, as at F, and put the moulding straight, as shown.

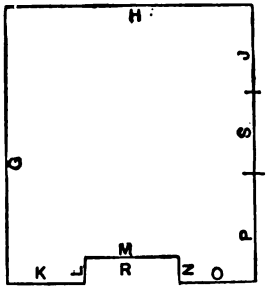

Fig. 226.—Room Plan showing where to fix Moulding.

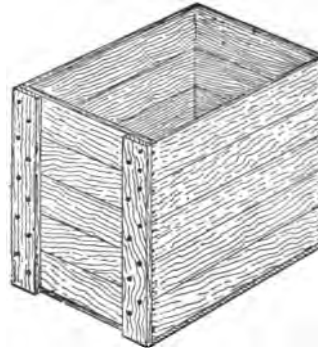

Fig. 227.—Packing Box for Frames.

In fixing the moulding, it is important first to consider where to begin. Fig. 226 shows a plan of an ordinary room, with the chimney breast at R and the window at S. The doors are not shown, as the moulding will run over them, and their positions will not affect it in the least. The first length to fix is that marked G; this must be nailed up as it is, no mitres being wanted at either end. But if the room is a fairly large one, the length may require splicing. If so, cut a mitre on one end, so that a nail can be driven through it into a plug; then on another piece of moulding cut the mitre the

reverse way, when it will fit the first one exactly, and can be nailed at the joint to the same plug.

The next length to fix is that marked H. Cut off the moulding so that it will fit just easily between the two walls at the side of the room. Then at the end which has to fit to the length G, with a sharp chisel and gouge remove whatever may be necessary to fit the front face of G. This is called "scribing," and if the wood is cut away carefully, this length will fit closely on G, when it must be nailed to the plugs.

The length J is fitted in the same way. First cut it off the right length to fit easily between the wall and the window architrave, then scribe it to H as above, and fix. The length K must be fixed next, scribing it to G and letting it fit closely to the chimney breast. L must first be scribed to fit K, and then held in position and marked at the back for the length. The connection between L and M must be a mitred joint, the mark above mentioned being the short side of the mitre; the mitre must be cut by the saw from the side opposite to that at the ends cut for scribing. The mitre should also be cut a trifle longer than the mark, as the chimney breast, as a rule, drops off at the ends.

After fixing L, fit the corresponding end of M to it, and also mark the length and cut the mitre in the same way as before; fix M, and fit and fix N to it. These three pieces, L, M, and N, should all be cut consecutively from the same length of moulding to ensure the correct intersection at the mitres. The remaining two pieces, O and P, will only require scribing and fixing in the order named, and the job is done.

And now, in this last chapter, something must be said concerning the packing of paintings, engravings, drawings, etc., for travelling.

Pictures (framed or unframed) may be divided into two classes, the first consisting of oil-paintings and engravings on stretchers, unmounted drawings, etc., and the second of pictures having some foundation or protection at the back; the latter class includes mounted

drawings, engravings on panelled strainers, and paintings on panels. In packing unprotected pictures, it is necessary to guard against anything being allowed to touch the painted surface; such works, therefore, should be packed, whenever possible, independently of, and separate from, backed pictures.

Supposing five framed oil-paintings on canvas, ranging from 36 in. by 28 in. downwards, have to be packed. The first consideration is the box, which is shown at Fig. 227. The thickness of the deal depends on the weight of the paintings and frames. All boxes

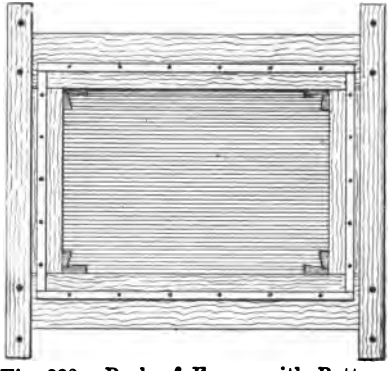

Fig. 228.—Back of Frame with Battens.

should be made at least 2 in. longer, and 4 in. or 6 in. wider (inside) than the outside measurement of the largest frame; in the present case the inside size will be 38 in. by 34 in. The depth required should then be ascertained; but before dealing with this it will be well to explain the manner in which the paintings are secured.

To the back of each frame (on the short sides) are screwed battens varying in thickness according to the weight of the frame (see Fig. 228). Fig. 229 illustrates a section of the packed box, all screws being shown in full for clearness. The bottom frame A, with battens attached, is first dropped into the box and secured with

screws which pass into the bottom; then come two boards the entire length of the inside of the box, and these drop down on the battens and are held from the outside by a couple of screws B. The width of the boards must always be at least 1 in. more than the combined thickness of any two frames which face one another; thus, supposing that A (Fig. 229) is 3 in. and C 2 in. thick, the width of the boards used against the sides to separate them will need to be 6 in. By adding together the thickness of any number of frames which are to occupy a case, and making the necessary allowance

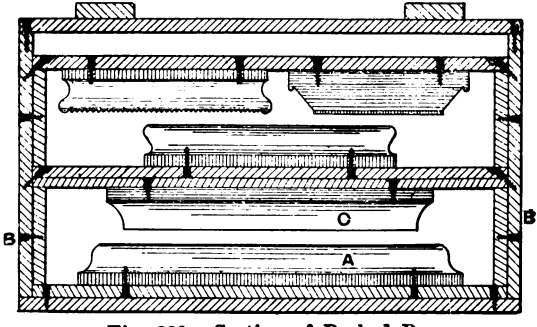

Fig. 229.—Section of Packed Box.

for battens, clear spaces, etc., the total depth required may be easily ascertained.

Paintings or engravings on canvas packed as shown cannot possibly sustain damage with fair handling; but it is advisable in the case of very large frames to take extra precaution by cutting notches in the boards on which the battens rest, so that the latter fit into them, as shown at D (Fig. 230). To keep out dust and dirt, the insides of the boxes are lined with stout brown paper, which may be tacked or glued on; and it is a good plan to place newspapers or soft cloths loosely between the pictures, as these would catch particles of ornament that drop from a frame, and prevent the scratching of the painted canvas.

Large paintings having frames which are glazed must be screwed down so as to take a perfectly even bearing—that is, the bottom of the box must be quite level—and if, as is often the case, the frame be a trifle winding, blocks must be placed under the battens. Do not force any one corner of the frame down to the

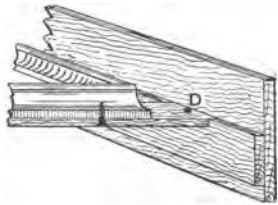

Fig. 230.—Method of Packing Large Frames.

level of the box; a broken glass will almost surely result from screwing down a crooked frame unless precaution is taken.

In packing backed pictures and frames, it must be understood that English frames require far greater care than the foreign washable ones; English gold work would often be completely ruined by the usage which a foreign moulding receives in the hands of a packer. Washable frames, generally speaking, ride well with a simple pad of soft paper placed at each corner

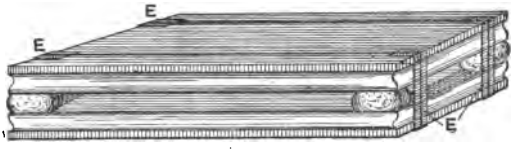

Fig. 231.—Method of Packing Washable Frame.

and a cord tied across (Fig. 231); several thicknesses of strong folded paper E should never be omitted, as it protects the sides and projecting ornaments from damage through the pressure of string. Whenever possible, frames tied together in this fashion should stand endways in the box, as illustrated in the

section (Fig. 232); thus there is no great weight on any one picture. The space F is filled with fine shavings, hay, straw, or dry paper; in labelling boxes packed in this way, the words, "THIS SIDE UP" should be conspicuous on the lid. English gold frames having backs

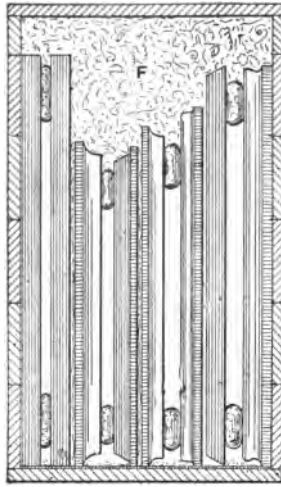

Fig. 232.—Section of Packed Box of Washable Frames.

may be packed after the fashion shown in Fig. 232, provided that there are no projecting corners or ornaments, but much greater care is required on account of the delicate nature of the gilt surface. Fig. 233 shows a thin batten which has been extensively used for newly gilt

Fig. 233.—Batten used for Newly Gilt Frames.

work; the end pads consist of tow which is wound round and covered with several thicknesses of tissue paper, the ends of the paper being secured with a touch of glue. These padded battens project about an inch over the frames, the pictures being put face to face as in

Fig. 234, and tied in the usual way. After tying together, gold frames must always be wrapped first in soft and then in stout paper previous to being placed in the box.

Fig. 235 shows a method of packing cornered gold

Fig. 234.—Frames with Batten between.

frames and common ones in the same case. The frames in the bottom of the box are packed exactly as shown at Fig. 232, and are separated from the gold frames by means of rough outside backing tacked down on a ledge. One picture requiring separate packing is then screwed

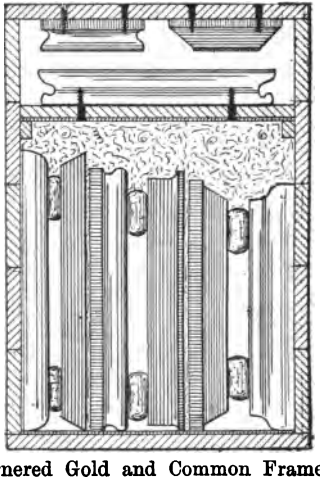

Fig. 235.—Cornered Gold and Common Frames packed in same Box.

down on the backing, while the others are fastened on battens to the lid. When the frames are small and slight, brass plates, as shown in Fig. 236, may be employed instead of battens; one in the centre of each

side of the frame will generally be found sufficient. The greatest care is required in screwing the plates, etc., to the back of English gilt frames ; it is a good plan to place each frame face downwards on a folded baize and to get help in steadying the frame whilst screws are being driven, otherwise the high ornaments are likely to be rubbed bare.

Fig. 236.

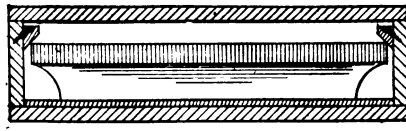

Fig. 237.

Fig. 238.

Fig. 236.—Brass Plate; Fig. 237.—Method of Packing Single Frame; Fig. 238.—Bent Nail for holding together Canvases.

There is another method of packing, which is to be recommended when only a single frame or a couple of similar size have to be cased. The box is made ½ in. larger each way than the outside size of the frame ; the bottom is then padded inside with about half a dozen thicknesses of paper before the frame goes in. A block is made to take a screw, as shown in Fig. 237, and the frame, being face downwards, is secured by means of a block in the centre of each short side and

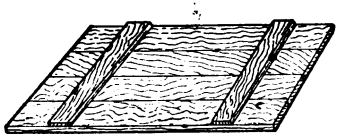

Fig. 239.—Method of Packing Unmounted Etchings.

Fig. 240. — Method of Packing Unframed Canvases.

two blocks along the long sides, as shown in the section, Fig. 237. When two frames are packed in this way, they are tied face to face as in former examples.

Unframed canvases may be safely packed, even if soft or wet, by the simple contrivance shown in Fig. 238. It is a long thin wire nail, which has had the head

removed, the top pointed, and both ends bent. One of the wires is driven in near each corner of the canvases, which are thus kept apart as in Fig. 240; any number may be nailed together, and will travel in perfect safety.

Mounted drawings, prints, or unmounted etchings, are best packed in boards such as that shown in Fig. 239. These are made from ¼-in. or ⅜-in. deal or pine, and all nails must be well clenched on the inside, or the prints will be damaged. Boards used in packing are always thoroughly dried beforehand, and the pictures themselves placed in paper and sealed before being enclosed.

Valuable pictures, when sent abroad, are often first carefully packed in a light box; this is then enclosed in sheet zinc, and then closely fitted into a stout outer wooden case.

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